15. 2. 45

pp. 1-80] January, 1945

TROPICAL DISEASES BULLETIN

VOL. 42.] 1945. [No. 1.

MAIN CONTENTS:

	PAGES
Summary of Recent Abstracts I.—Cholera	1–2
Malaria	3–10
Blackwater Fever	10–13
Trypanosomiasis	13–17
Leishmaniasis	17–20
Fevers of the Typhus Group ...	20–31
Yellow Fever	32
Dengue	32
Plague	32–34
Cholera	34
Bacillary Dysentery	34–36
Amoebiasis and Intestinal Protozoal Infections	36–41
Relapsing Fever and other Spirochaetoses	41–43
Leprosy	43–45
Helminthiasis	45–55
Deficiency Diseases	55–58
Haematology	58–62
Venoms and Antivenenes ...	62–65
Dermatology and Fungous Diseases	66–67
Miscellaneous Diseases ...	67–71
General Protozoology and Protozoal Diseases	71–72
General Entomology	72–74
Laboratory Procedures ...	74–75
Reports, Surveys and Miscellaneous Papers	75–78
Book Reviews	78–80

For detailed Contents see pp. ii, iv, vi, vii and viii.

Issued under
the Direction of the
Honorary Managing Committee of the
BUREAU OF HYGIENE AND TROPICAL DISEASES,
Keppel Street, London, W.C.1.
(Telephone: MUSEUM 3041)

Price 2/6 Net.] *Entered as Second Class Matter in the U.S.A. Post.* [Annual Subscription 21/-

HONORARY MANAGING COMMITTEE

APPOINTED BY THE SECRETARY OF STATE FOR THE COLONIES.

Chairman : W. H. Kauntze, *C.M.G.*, *M.B.E.*, M.D., D.P.H., M.R.C.P. (*Chief Medical Adviser to the Secretary of State for the Colonies*).

Wm. Horner Andrews, D.Sc., M.R.C.V.S.

Lieut.-General Sir Ernest W. C. Bradfield, *K.C.I.E.*, I.M.S. (retd.).

Sir Wilson Jameson, *K.C.B.*, LL.D., M.D., F.R.C.P. (*representing the Ministry of Health*).

Professor Patrick A. Buxton, M.A., M.R.C.S., L.R.C.P., D.T.M. & H., F.R.S. (*representing the Royal Society*).

Sir Philip Manson-Bahr, *C.M.G.*, *D.S.O.*, M.D., F.R.C.P., D.T.M. & H.

Sir Edward Mellanby, *K.C.B.*, M.D., F.R.C.P., F.R.S., K.H.P. (*representing the Medical Research Council*).

E. R. A. Merewether, M.D., M.R.C.P., F.R.S.E., K.H.P.

Brigadier G. S. Parkinson, *D.S.O.*, M.R.C.S., L.R.C.P., D.P.H., R.A.M.C.

J. B. Sidebotham, M.A. (*of the Colonial Office*).

Secretary : C. A. Grossmith, *of the Colonial Office*.

STAFF OF THE BUREAU :

Acting Director : Charles Wilcocks, M.D., M.R.C.P., D.T.M. & H.

Acting Assistant Director : J. F. Corson, *O.B.E.*, M.D., D.P.H., D.T.M. & H.

Secretary : R. L. Sheppard.

LIST OF ABSTRACTERS IN THIS ISSUE.

T. Bedford, D.Sc., Ph.D.

Mrs. Mary G. Blacklock, *C.B.E.*, B.Sc., M.B., Ch.B., B.A.O., D.T.M.

E. G. L. Bywaters, M.B., B.S., M.R.C.P.

C. C. Chesterman, *O.B.E.*, M.D., M.R.C.P., D.T.M. & H.

J. F. Corson, *O.B.E.*, M.D., D.P.H., D.T.M. & H.

Robert Cruickshank, M.D., M.R.C.P., D.P.H.

J. T. Duncan, F.R.C.S., L.R.C.P., (Ire.), D.T.M. & H.

J. D. Fulton, M.A., B.Sc., Ph.D., M.B., Ch.B., D.T.M.

Lt.-Col. W. F. Harvey, *C.I.E.*, M.B., F.R.C.P.E., D.P.H., I.M.S. (retd.) (*Sectional Editor*).

F. Hawking, D.M., D.T.M.

Professor Edward Hindle, M.A., Sc.D., Ph.D., F.R.S. (*Sectional Editor*).

G. Lapage, M.D., M.Sc.

Lt.-Col. B. G. Maegraith, B.Sc., D.Phil., M.B., B.S., R.A.M.C.

Sir Philip Manson-Bahr, *C.M.G.*, *D.S.O.*, M.D., F.R.C.P., D.T.M. & H.

Maj.-Gen. Sir John W. D. Megaw, *K.C.I.E.*, D.Sc., M.B., B.Ch., I.M.S. (retd.) (*Sectional Editor*).

Lt.-Col. E. Samuel, M.D., F.R.C.S., D.M.R.E., R.A.M.C.

Sir H. Harold Scott, *K.C.M.G.*, M.D., F.R.C.P., D.P.H., D.T.M. & H.

H. S. Stannus, Ph.D., M.D., F.R.C.P., D.T.M. & H. (*Sectional Editor*).

Miss Janet Vaughan, M.D., F.R.C.P.

C. M. Wenyon, *C.M.G.*, *O.B.E.*, M.B., B.S., B.Sc., F.R.S. (*Sectional Editor*).

F. Norman White, *C.I.E.*, M.D., D.P.H., I.M.S. (retd.) (*Sectional Editor*).

V. B. Wigglesworth, M.D., B.Ch., F.R.S.

Charles Wilcocks, M.D., M.R.C.P., D.T.M. & H.

BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 42.] 1945. [No. 1.

SUMMARY OF RECENT ABSTRACTS.*

I. CHOLERA.

Very little work on cholera has been reported in the period under review, but for the sake of continuity the information available is summarized in the usual way.

Epidemiology and Bacteriology.

Investigations into the endemicity of cholera in Bengal and Madras are being carried out under the auspices of the Indian Research Fund Association (p. 39). In Tanjore the mortality has decreased between 1930 and 1941, but the enquiry is to be continued in certain small areas suitable for this kind of study. The districts should be homogeneous in respect of their cholera history, and a number of taluks have been chosen, which satisfy the requirements, and in which the studies will be made.

The Scientific Advisory Board of the Indian Research Fund Association (p. 39) reports that Inaba and Ogawa subtypes of *V. cholerae* have been isolated from water of the Hooghly river; 15 of 644 samples were positive, isolation being made by the candle-boric-peptone-water method [see this *Bulletin*, 1943, v. 40, 241]. The majority of the samples tested were positive for non-agglutinating vibrios. The same method gave much better results in isolation from cholera stools than did direct plating on bile-salt agar or the Wilson and Blair medium. Cholera vibrios added to Hooghly water could not be isolated from it after a period of 3–4 days, but when the water had previously been filtered they could be isolated up to the third week.

PANJA and GHOSH (p. 40) have shown that brilliant green, malachite green, crystal violet and methylene violet have a selective bactericidal action *in vitro* on most Inaba and Ogawa subtypes of *V. cholerae*. Thus, brilliant green at a dilution of 1 in 100,000 exerted a completely selective bactericidal effect on those subtypes, being harmless to non-agglutinating vibrios isolated from Hooghly water. Cholera patients have been treated with brilliant green by the mouth, but although vibrios disappeared early from the stools, clinical improvement was not especially marked.

SEN GUPTA (p. 401) shows that in the Calcutta area, during the past few years, there has been a very decided swing towards preponderance of the Ogawa

*The information from which this series of summaries has been compiled is given in the abstracts which have appeared in the *Tropical Diseases Bulletin*, 1944, v. 41. References to the abstracts are given under the names of the authors quoted and the pages on which the abstracts are printed.

subtype of *V. cholerae* in isolations made from cases of cholera ; in 1943 only 1 Inaba strain was recovered, against 154 Ogawa. The matter is held to be important in its bearing on the subtypes from which vaccine should be prepared, and the author makes the point that during epidemics great care should be taken to determine the prevalent subtype so that an appropriate vaccine can be made.

GALLUT has previously shown that the cholera vibrio contains a glucolipidic complex which is the somatic O antigen, and that the toxin itself contains both glucolipidic and protein active elements. As a result of quantitative studies on the precipitation of the glucolipidic antigen by antiserum, this author, with GRABAR (p. 401), has found notable differences in the immunological behaviour of vibrios belonging even to the same serological group, which may form the basis of a classification of cholera vibrios in general. The same authors (p. 402) have found that the cholera toxin contains no antigen other than the glucolipid. When first elaborated, the toxin apparently contains a complex glucolipid antigen, which is subsequently split into a simpler glucolipid (such as that of the extract of the vibrios) and a substance which is not precipitated by the immune serum.

GALLUT and BRUMPT (p. 848) have found, in animals immunized with O and OH cholera vaccine (Inaba S type), that agglutination of the homologous vibrio occurs within a few minutes if the vibrio suspension is mixed with whole blood of the immunized animal. The vibrio suspension is heated at 56°C. for the OH antigen, and at 100°C., for 2 hours (or the glucolipidic antigen is used) for the O antigen. The suspension, after filtration through cotton wool, is coloured with methylene blue to facilitate reading of the test. It is possible that agglutination with whole blood, instead of serum, will be found useful in human cholera, especially in cases in which serological methods give equivocal results ; in other diseases, for instance the enteric fevers and typhus, in which whole blood agglutination has been compared with serum tests, the evidence is, in general, in favour of the whole blood test. Incidentally, the authors found that intravenous injection of the vaccines produced, in rabbits, better immunological response than subcutaneous injections.

Clinical Findings and Treatment.

In the Report of the Scientific Advisory Board of the Indian Research Fund Association for 1942 (p. 39) is a brief mention of the treatment of cholera with sulphaguanidine. No claims are made, but the results appear to be favourable enough for the trials to be continued. Investigation of the value of sulphasuxidine is also in progress. All agglutinating vibrios are very susceptible *in vitro* to brilliant green and malachite green, and administration of the former (1 in 2,500 dilution, but the actual dose is not stated) to cholera patients caused the vibrios to disappear from the stools more quickly than they disappeared in controls not treated with the dye.

HUANG (p. 849) writes in very favourable terms of the value of sulphaguanidine in the treatment of cholera, especially when combined with injection of saline. He records 22 cases so treated ; only one patient died. The dosage was as follows :—sulphaguanidine 3 gm. as a first dose, followed by 1 gm. every 2 hours for 6 doses, then 1 gm. every 4 hours for 1–2 days. The number of cases is admittedly small, but the results appear to have been striking.

WENDEROTH (p. 130) has described three cases in which there was, apparently, hypersensitivity to the protein of *V. cholerae* ; this was shown by severe systemic reaction to the injection of cholera vaccine. *Charles Wilcocks.*

MALARIA.

i. RIBBANDS, C. R. **Differences between** *Anopheles melas* (*A. gambiae* **var.** *melas*) **and** *Anopheles gambiae*. **1.—The Larval Pecten.** *Ann. Trop. Med. & Parasit.* 1944, Sept. 30, v. 38, No. 2, 85–6, 2 figs.

ii. ——. **Differences between** *Anopheles melas* **and** *Anopheles gambiae*. **II.—Salinity Relations of Larvae and Maxillary Palp Banding of Adult Females.** *Ibid.*, 87–99, 2 figs. [15 refs.]

i. In the past *Anopheles melas* has been regarded as a variety of *A. gambiae*, produced, it was supposed, when the larva had developed in highly saline water. In these two papers the author establishes that *A. melas* is a distinct species. There are constant differences between the eggs of the two mosquitoes (THOMSON, unpublished observations). In the first paper here reviewed it is shown that there are constant differences in the larval pecten : all families resistant to salinity had pectens of the *melas* type (with more or less even teeth) ; the pectens of all non-resistant families were of the *gambiae* type (with a number of long teeth interspersed among the shorter teeth).

ii. In the second paper it is shown that the palpal banding of the adult female is not a constant character. Only 54 per cent. of true *melas* (as determined by the larval pecten and by their resistance to high salinity) were recognizable as such from the palpal bands when reared in the laboratory ; far fewer will be recognizable in the wild population. The marking of the palps varies from the typical *gambiae* type to the extreme *melas* type in single families ; and the proportion of the *melas* type varies widely from one family to another and probably in different populations. There was no correlation between the proportion of *A. melas* with extra dark markings on the palps and the salinity of the water in which they had been reared. The differences are truly genetic. *A. gambiae* will develop from egg to adult in 37½ per cent. sea water (11·9 gm. NaCl per litre), or 60 per cent. if they are accustomed to it gradually. *A. melas* will develop completely in 150 per cent. sea water (47·6 gm. NaCl. per litre) ; many larvae will survive transfer to 225 per cent. (71·3 gm. NaCl per litre). A practical test for distinguishing the two larvae has been evolved. Batches of mixed larvae are transferred to 37½ per cent. sea water for one day and then to 75 per cent. sea water on the second day. *A. melas* larvae survive ; *A. gambiae* are eliminated by the end of the second day. The difficulty in distinguishing the adults of the two species is unfortunate because it is important to know what proportion of malaria transmission in a locality is due to *gambiae* and how much due to *melas* ; for the breeding places of *gambiae* are small, concentrated and easily recognized, whereas those of *melas* are so large and sparsely populated by larvae that they may be overlooked. *V. B. Wigglesworth.*

ULITCHEVA, A. V. [**Anophelogenic Rôle of the various Types of Waters of a Rice Region.**] *Med. Parasit. & Parasitic Dis.* Moscow. 1943, v. 11, No. 6, 38–47, 7 graphs.

An abstract of this paper is published in *Rev. Applied Entom.* Ser. B. 1944, Sept., v. 32, Pt. 9, 169–70.

ULITCHEVA, A. V. [**Distribution of the Larvae of** *Anopheles maculipennis sacharovi* **through a Rice-Field (Samarkand District).**] *Med. Parasit. & Parasitic Dis.* Moscow. 1943, v. 11, No. 6, 47–52, 3 graphs.

An abstract of this paper is published in *Rev. Applied Entom.* Ser. B. 1944, Sept., v. 32, Pt. 9, 170–71.

ULITCHEVA, A. V. [**The Ecology of the *Anopheles* Larvae in Rice-Fields of various Types in Uzbekistan.**] *Med. Parasit. & Parasitic Dis.* Moscow. 1943, v. 11, No. 6, 53–61.

An abstract of this paper is published in *Rev. Applied Entom.* Ser. B. 1944, Sept., v. 32, Pt. 9, 171–2.

GALVÃO, A. L. A., CORRÊA, R. R. & GRIECO, S. J. Alguns dados sôbre a manutenção de colônias de Nyssorhynchus em laboratório. [**Rearing and Maintaining Anophelines in the Laboratory.**] *Arquivos de Hig. e Saúde Pública.* 1944, Jan., v. 9, No. 20, 85–102, 10 figs. English summary (7 lines) p. 96.

The authors have confirmed the work of BOYD, CAIN and MULRENNAN [see this *Bulletin*, 1935, v. 32, 806] who stressed the facts that success in rearing mosquito larvae depends upon an abundant supply of the proper food and the maintenance of temperature constantly at an optimal level. In order to test the therapeutic value of drugs in experimentally transmitted malaria the authors wished to rear and maintain efficient vectors, namely *A. albitarsis domesticus*, *A. argyritarsis* and *A. tarsimaculatus*. With this end in view they adopted the original method of Boyd and his colleagues with certain minor modifications, which are described. These have regard to the food, the temperature and the breeding room and cannot be abstracted. Those interested should consult the original which is well illustrated. Their colonies are being maintained and so far they have bred the first-named to the seventh generation, the second to the sixth and the third to the fifth. *H. Harold Scott.*

GLASGOW, R. D. & BLAIR, R. **The Use of Explosives for the Application of Insecticide Dusts.** *J. Econom. Entom.* 1944, Apr., v. 37, No. 2, 230–34, 4 figs.

An account is given of some preliminary experiments in which insecticidal dusts were discharged from improvised mortars with the object of controlling caterpillars in the inaccessible parts of large trees. It is suggested that the method might be developed for applying larvicides under war conditions to the breeding places of mosquitoes which cannot readily be reached by other means. The breeding of *Anopheles bellator* in the epiphytes on the Immortelle which is grown as a shade tree in the cocoa plantations of Trinidad is given as an example. *V. B. Wigglesworth.*

SHEPHERD, W. H. T. **Radiological Estimation of Splenic Enlargement in Malignant Tertian Malaria.** *Brit. J. Radiology.* 1944, Sept., v. 17, No. 201, 280–85, 9 figs.

A radiographic technique for demonstrating the spleen without the use of any contrast medium is described. This technique was then applied (*a*) to determine the size of the normal spleen (controls), (*b*) to determine the size of the spleen in clinically suspected malaria, and (*c*) to determine the size at which the spleen becomes clinically palpable. It was hoped that from the second of these investigations some information might be derived which would assist in the diagnosis in doubtful cases.

The product of the length and breadth (measured in inches) of the shadow of the spleen was called the Radiographic Splenic Index.

It was concluded that the upper limit for the normal radiographic spleen was an index of 8. The index for the earliest degree of enlargement which could be detected clinically was 9½–10½. Fifteen cases of malaria showed a considerably raised splenic index in the region of 11–14½.

The author concludes that in cases in which the clinical diagnosis is doubtful and blood smears for malarial parasites are negative, the radiographic splenic index may be of diagnostic value by demonstrating enlargements (not clinically appreciable) of the spleen. *E. Samuel.*

HUNT, T. C. **Medical Experiences in North Africa, 1943–4.** *Brit. Med. J.* 1944, Oct. 14, 495–8. [**Malaria** 496–7.]

"Nothing surprised me more about malaria in North Africa than its difference from malaria in West Africa. In North Africa we saw both benign tertian and malignant tertian. There were many relapse cases—some severe, persistent, and resistant to treatment—but in over 1,000 patients admitted to my division there was not a single death. This was certainly better than in West Africa, where I had one death from cerebral malaria and one from blackwater fever in roughly the same number of cases, but for clinical severity the M.T. malaria of North Africa was unquestionably the more alarming. In North Africa the condition was more polysymptomatic, the need for treatment more urgent, and the response often less satisfactory: here intravenous quinine injections became a frequent and almost usual procedure, while in West Africa it was rare. During the malaria season over 1,000 injections were given in my hospital with only minor symptoms on two or three occasions. This timely intravenous quinine no doubt saved many lives among desperate cases, even though a considerable number would almost certainly have recovered with oral treatment alone. Of the many well-known and important lessons about malaria—often learnt, perhaps, at a price—these were some that we learnt once more in North Africa.

"1. In a malarious country headache is not to be regarded as due to psychoneurosis until malaria has been excluded.

"2. Malaria with low fever may be more dangerous than with high, because it is more easily missed.

"3. To wait for a positive blood slide or a palpable spleen costs more lives than to treat a suspicious case on an unproved diagnosis.

"4. The exact date of onset of malaria is not the same thing as the date of admission to a medical unit; where a man lives may be much more important than what he does.

"5. To transfer a case of active malaria without treatment and without full precautions for continuation of treatment is a medical crime.

"6. Other diseases do not exclude malaria; and malaria, especially relapsing malaria, has often some complicating disease.

"7. Diarrhoea with blood and fever is not always due to dysentery; jaundice with fever is not always infective hepatitis; malaria may mimic both. Asthma, fibrositis, neuritis, urticaria, and nephritis are only some of the less-well-recognized conditions that malaria may cause, while it may simulate at least a dozen others."

GAYID, I. K. **Some Notes on the Symptomatology and Treatment of Malaria.** *J. Roy. Army Med. Corps.* 1944, July, v. 83, No. 1, 28–33, 4 charts.

These notes are the result of experience in a desert General Hospital of the Middle East Command. During 1942 dysentery (1,332 cases) and malaria (1,126 cases) were the most prevalent diseases treated. Ninety-two per cent. of the malaria cases occurred during the four months July to October, the September total (440) being the highest.

In the author's experience *P. vivax* infections frequently fail to produce the characteristic regular febrile periodicity described in text-books; five illustrative cases are recorded. For a patient with irregular fever and enlarged spleen, and

a past history of malaria or exposure to malaria infection, anti-malarial treatment is indicated even if no parasites be found on blood examination. If there be no response to quinine, 10 grains thrice daily for two days, the treatment should be stopped and the diagnosis reviewed. Malaria not uncommonly coexists with other infections.

The standard treatment of malaria in the Middle East has been: quinine grains 10, thrice daily for 3 days; mepacrine 0·1 gm. thrice daily for the next 5 days; after 3 days without specific treatment pamaquin 0·01 gm. thrice daily for 3 days. If there be vomiting—or in heavy infections—the treatment is begun with one or two intramuscular injections of quinine, 8 to 10 grains during the first day. Intravenous quinine should be used sparingly: it is advisable to give adrenaline at the same time, either intramuscularly or intravenously. The author advocates for intravenous administration 8 to 10 grains of quinine in 20 cc. of 25 to 50 per cent. glucose solution. *Norman White.*

RICO-AVELLO, C. Clinica atipica del paludismo marroqui. [**Atypical Malaria in Morocco.**] *Med. Colonial.* Madrid. 1944, July 10, v. 4, No. 1, 7–17.

BALASQUIDE, L. A. La malaria en relación con la obstetricia y la ginecologia. [**Malaria in relation to Obstetrics and Gynaecology.**] *Bol. Asoc. Med. de Puerto Rico.* 1944, June, v. 36, No. 6, 269–77. [18 refs.]

FINDLAY, G. M., MARKSON, J. L. & HOLDEN, J. R. **Investigations in the Chemotherapy of Malaria in West Africa. I. Treatment with Quinine and Mepacrine.** *Ann. Trop. Med. & Parasit.* 1944, Sept. 30, v. 38, No. 2, 139–46.

The observations recorded in this paper were made in a West African Military Hospital. The patients were young adult European males who had not previously resided in the tropics. More than half of them were suffering from their first attack of malaria. Infection, *P. falciparum*, had been acquired in all parts of the four British West African colonies. There is some evidence that different strains of *P. falciparum* exist in West Africa: Africans from the Gold Coast stationed on the north bank of the Gambia River had a surprisingly high malaria-rate, and Belgian Congo African troops in Nigeria had a malaria rate three times as high as that of Nigerian troops stationed nearby.

With military patients in a hyperendemic area it is essential to avoid both under-treatment and over-treatment. There is no evidence that excessive dosage decreases the relapse rate. The impossibility, in most cases, in hyperendemic malaria regions, of distinguishing reinfection from relapse makes it difficult to assess the value of a particular treatment in preventing the latter. Nevertheless the chances of a second attack of malaria in such areas are not very great. A random sample of British troops was carefully observed during 1943; the incidence of malaria was:—

No. of British Officers and other ranks	No. with malaria	No. of attacks of malaria					
		1	2	3	4	5	6
2,441	538	395	88	39	12	3	1

Two-thirds of the patients had been treated with quinine and mepacrine and one-third with mepacrine alone: there was no evidence that either treatment was more effective than the other in preventing return to hospital.

To determine whether mepacrine could be substituted entirely for quinine—and, if so, the most suitable dose for the treatment of malaria in West Africa—140 patients with *P. falciparum* infections were treated as follows :—

(1) 20 patients ; quinine sulphate 30 grains daily for 6 days.
(2) 40 patients ; quinine sulphate 30 grains daily for 2 days, followed by mepacrine 0·3 gm. daily for 6 days.
(3) 40 patients ; mepacrine 0·3 gm. daily for 6 days.
(4) 20 patients ; mepacrine 0·6 gm. first day, 0·4 gm. second day and third days, 0·3 gm. on each of the next three days.
(5) 20 patients ; mepacrine 0·8 gm. the first day, 0·4 gm. second and third days, 0·3 gm. fourth, fifth and sixth days.

Malaria parasites had been found in the peripheral blood of all these patients before treatment was begun. In a number of cases of clinical malaria in which no parasites could be found in the peripheral blood, smears from sternal bone-marrow revealed their presence. There are no such cases in the present series. No selection of cases was made except that two patients with hyperparasitism were treated with intravenous quinine. Thick blood films were examined morning and evening. For parasite counts, the number of parasites in 10 fields was counted (1/12 objective and ×6 ocular). Parasites were not said to have disappeared from the blood until 100 fields had been examined with negative results. Quinine salts were given in solution, the dose being followed by a tumblerful of water. Mepacrine crushed up in fruit juice is a useful way in which to give the drug ; some coated mepacrine tablets were relatively insoluble.

The effect of drug treatment on duration of fever, symptoms and parasites in the peripheral blood was :—

Treatment	Average duration of fever in hours	Average duration of symptoms in hours	Average duration of parasites in hours
No. 1	63·3	64·2	25·5
No. 2	59·7	73·8	40·8
No. 3	75·6	88·8	67·1
No. 4	64·8	71·4	63·0
No. 5	66·0	67·8	48·0

It happened that the patients treated with an initial dose of 0·8 gm. of mepacrine (No. 5) were relatively severe cases with high initial parasite counts, while those treated with quinine alone (No. 1) were relatively mild cases. The authors conclude that, in the treatment of *P. falciparum* infections in Europeans in West Africa, mepacrine alone is as satisfactory as quinine alone, or as quinine and mepacrine, provided that 0·8 gm. of mepacrine is given during the first 24 hours. Small doses of mepacrine, 0·3 gm. daily, are capable of dealing with small numbers of parasites in the peripheral blood stream. A low initial parasite count is sometimes followed by a considerable rise in the number of parasites. No toxic effects were noted with the large doses of mepacrine, though some of the patients had been taking the drug as a prophylactic, 0·6 gm. weekly, for six months or more. In the treatment of uncomplicated cases of malignant tertian fever in Europeans in West Africa—the great majority of cases among people who have been taking a suppressive drug with regularity—quinine can be entirely replaced by mepacrine. Quinine is reserved for cases of cerebral malaria, for hyperparasitism (15 per cent. or more of red cells parasitized), for the rare cases where temperatures of 103°–105°F. have failed to react to mepacrine, and for the still rarer cases in which mepacrine has caused vomiting or psychotic change. *Norman White.*

NUTRITION REVIEWS. New York. 1944, July, v. 2, No. 7, 207–9. **Nutrition and Atabrine Tolerance.**

This is a review of recent experimental work on the relationship between the toxic effects of atabrine [mepacrine or atebrin] and the state of nutrition of the experimental animal. It was shown by MARTIN, COMINOLE and CLARK (*J. Pharm. & Exper. Therap.*, 1939, v. 65, 156) that atabrine may cause necrosis of the liver, and FOSTER and WHIPPLE (*Amer. J. Physiol.*, 1922, v. 58, 407) found that destruction of liver tissue may cause an increase in the plasma fibrinogen. Experimental investigations of the toxic action of atabrine have recently been made by WRIGHT and LILLIE [this *Bulletin*, 1944, v. 41, 99], by SCUDI and HAMLIN [*ibid.*, 262, 263 & 728], by SCUDI, JELINEK and KUNA [*ibid.*, 728] and by HEGSTED, MCKIBBIN and STARE [*ibid.*, 649]. Some of the results of this work, mentioned in this review, are: (1) the toxic effect of atabrine was greater in starved animals than in well-fed ones; (2) a high-protein, low-fat diet gave more protection against the toxic action of atabrine than the other diets tested; (3) atabrine in daily doses of 25–30 mgm. per kgm. of body weight did not produce any ill-effects in rats fed on an adequate diet, but larger doses did; (4) atabrine protected rats against the causation of kidney haemorrhages by choline deficiency.

The review concludes with the observation that these investigations "offer a clear indication of the interdependence of the nutrition of animals and the action of drugs in the body." *J. F. Corson.*

HAMMICK, D. Ll. & FRITH, D. **Mepacrine Derivatives in Urine.** [Correspondence.] *Nature.* 1944, Oct. 7, 461.

Examination by chromatographic methods was made of urine from persons taking mepacrine and a substance was isolated which appears to be 2-hydroxy-6-chloro-9-amino-acridine. This may possibly be the substance, designated Fraction C, isolated by SCUDI and JELINEK from the urine of dogs dosed with mepacrine [this *Bulletin*, 1944, v. 41, 452]. The presence of 2-hydroxy-6-chloro-9-amino-acridine does not interfere with the estimation of mepacrine by Masen's method [below] or by chromatographic methods. *F. Hawking.*

MASEN, J. M. **The Determination of Atebrin (Quinacrine Hydrochloride) in Blood and Urine.** *J. Biol. Chem.* 1943, v. 148, 529–39. [Summary taken from *Chem. Abstr.*, 1943, Oct. 10, v. 37, No. 19, 5751. Signed H. J. TAGNON.]

The detn. is carried out as follows: Into a 25-ml. separatory funnel add 3 ml. 4*N* NaOH, 8 ml. iso-PrOH-iso-BuOH mixt. (equal parts), 1 ml. of water, 7 ml. petr. ether, 5 ml. of blood. Mix and shake vigorously for 5 min. Decant, discard the lower layer and decant again after centrifugation. Add 10 ml. 0·3 *N* NaOH, shake for 1 min. Decant, discard the lower layer and decant again after centrifugation. Add 10 ml. of 30 per cent. iso-PrOH in 0·1 *N* HCl, shake and decant after 5 min. centrifugation. Draw off 8 ml. of the lower layer, contg. atebrin in a fluorometer cuvette. The blank is the iso-PrOH acid soln. Add 1 ml. NaOH-borate buffer mixt. to each cuvette (Na borate 4 g. in 1·35 *N* NaOH 100 ml.) and read. The control is treated the same way as sample; 1 ml. of water has been replaced by 1 ml. of atebrin base soln. (contg. 0·0025 mg. atebrin). The sensitivity of the method is 0·1 mg. per l. of blood. It is applicable to plasma and urine.

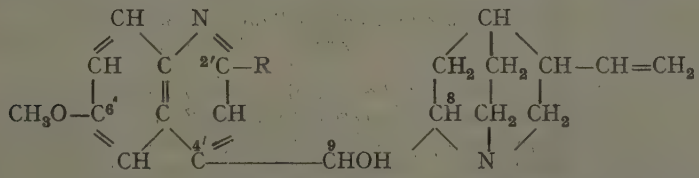
GELLER, W. Schädigungen des Zentralnervensystems durch Atebrin? [**Does Mepacrine damage the Central Nervous System?**] *Deut. med. Woch.* 1944, Mar. 3., v. 70, No. 9/10, 123–5.

Much of this paper is polemical. KAHLER (*Deut. med. Woch.*, 1943, v. 69, No. 35/36) described a patient with benign tertian malaria, treated with mepacrine, who suffered from inability to concentrate or to reply to questions in the evening. Kahler considered these symptoms to be due to mepacrine; Geller argues at length that they were probably due to the malaria. Geller has administered 4·0 gm. mepacrine during 2–3 weeks to many patients and has treated many others with smaller amounts, and he has never seen any evidence for the view that mepacrine causes damage to the central nervous system. [Large doses of mepacrine given to uninfected volunteers may cause psychotic symptoms, so that there is no doubt that the compound in a sufficiently high concentration does affect the central nervous system. On the other hand, the experience of the British and American Services during the present war has shown that psychotic symptoms following mepacrine are rare in actual practice, and that they usually disappear completely when the mepacrine is discontinued.]

F. Hawking.

MEAD, J. & KOEPFLI, J. B. **The Structure of a New Derivative of Quinine.** *J. Biol. Chem.* 1944, Aug., v. 154, No. 3, 507–15, 2 figs.

A crystalline product was recently obtained by KELSEY *et al.* [this *Bulletin*, 1944, v. 41, 923] when rabbit liver was allowed to react with quinine *in vitro*. The present investigations were undertaken in order to establish the constitution of the new product, referred to by the authors as QDP (quinine-derived product). Evidence has been obtained that it is a simple derivative of quinine, in which a hydrogen atom of the parent substance has been replaced by a hydroxyl group, as shown in the accompanying formula, in which R=H in quinine and R=OH in QDP. [Many substances are known to be eliminated by the animal organism as hydroxy derivatives, *e.g.*, benzene, benz-pyrene, phenothiazine, to quote only a few.]



The new product is a homogeneous optically active (laevo-rotatory) crystalline substance with M.P. 247·5–248·5°C. It is soluble in the common organic solvents, except hydrocarbons, and is insoluble in water. It dissolves in dilute mineral acids but not in ammonia or N alkali hydroxides, although soluble in 3N solutions of the latter. It does not appear to have a titratable acid group. All its solutions exhibit a dark blue fluorescence and the dissolved substance is readily adsorbed on a column of calcium carbonate.

The assigned formula was arrived at by the use of chemical and physical methods, including a comparison of the absorption spectra of quinine, 2-hydroxy-6-methoxy-4-methylquinoline and QDP. [The maxima and minima of the two latter substances lie close together and the values of wave lengths for these points, as given in the text, would appear to have been interchanged in the accompanying figure. There also appears to be a discrepancy in the wave length recorded for one minimum in the case of quinine.]

The new product was shown to be homogeneous and the evidence on which the correctness of the assigned formula is based is supported by the analytical results, by the molecular weight as shown by hydrogenation experiments, and by the presence of an intact quinuclidine ring. Other evidence indicates that it is the quinoline portion of the quinine molecule which has undergone change with the introduction of a hydroxyl group in the position shown. Two experimental observations made by the authors regarding the structure of QDP require further investigation but do not invalidate the formula assigned to it.

J. D. Fulton.

SIMPSON, M. L. **Exoerythrocytic Stages of** *Plasmodium durae. J. Parasitology.* 1944, June, v. 30, No. 3, 177–8.

The malarial parasite discovered in 1941 in a turkey by HERMAN was studied by the author in experimentally inoculated turkeys and ducks. In three of ten turkeys, but in none of fifteen ducks, exoerythrocytic schizonts were found in the brain, lungs, spleen and liver. It is considered that the schizonts described by PURCHASE in 1942 [this *Bulletin*, 1943, v. 40, 363] as occurring in endothelial cells of small blood vessels of the liver, spleen and brain of infected turkeys may have been the same exoerythrocytic schizonts. *C. M. Wenyon.*

BLACKWATER FEVER.

MAEGRAITH, B. **Blackwater Fever Anuria.** *Trans. Roy. Soc. Trop. Med. & Hyg.* 1944, Aug., v. 38, No. 1, 1–17, 3 figs. [55 refs.] Discussion 17–23 [HOWARD, A. C.; HELME, A. C. de B.; SINTON, J. A.; MANSON-BAHR, P.; STANNUS, H. S.; CHESTERMAN, C. C.; MAEGRAITH (in reply)].

Colonel MAEGRAITH gives a short review of the more important literature on the mechanism of oliguria and anuria in blackwater fever, and on the effects of alkali therapy in that condition, together with some observations "a full account of which will be eventually available," on a series of 32 cases of blackwater fever with renal insufficiency observed in the West African Command, 1941 to 1943.

He points out that since 1922 the mortality rate of blackwater fever has increased from 20 per cent. (6,049 cases) to about 25 per cent. (305 cases receiving alkali therapy, since 1931). Whether alkali therapy is successful or not in preventing renal failure (the evidence on this point is conflicting and unsatisfactory), a decrease rather than an increase in the total mortality rate might have been expected if it were of practical value, as half the deaths in blackwater fever are associated with anuria.

The rationale of alkali therapy is based on the work of BAKER & DODDS, who showed that insoluble pigment was precipitated from haemoglobin-containing urines if acid and of a high salt content: this, they supposed, produced renal failure by mechanical blockage of the tubules. Maegraith advances 8 points against this theory:—

1. The urine in 17 original cases was as frequently alkaline as acid "before the onset of anuria"; in a series of 25 patients developing anuria who had acid urine "at the onset of blackwater fever," it became alkaline in 7 and it stayed permanently acid in 8. Previous work is cited, illustrating this failure of damaged kidneys to secrete alkaline urine, even when alkali administration is pushed to the point of alkalosis.

2. Nor does the chloride content of the urine in blackwater fever, about 0·5 gm. per 100 cc., appear from the literature to be sufficiently high to facilitate precipitation of pigment.

3. Haemoglobinuria may occur without anuria, even with acid urine, and especially in conditions other than blackwater fever.

4. "Again, in some cases of blackwater fever oliguria and anuria, kidney failure develops after the haemoglobinuria has ceased (sometimes many hours later) and may fail to develop after recovery from oliguria, although haemoglobinuria may persist."

5. "Anuria and oliguria develop in conditions and in circumstances which exactly parallel the renal failure of blackwater fever but in which there is no haemoglobinuria."

6. "The degree of blockage found in kidney tubules postmortem was insufficient to account for anuria."

7. "If blockage were the primary factor it would be expected that what urine was passed, coming, as it did, from unobstructed nephrons, would be normal in its constitution. In fact, this is not so." .... To account for this on the theory of blockage it would be necessary to show that the convoluted tubules have been so damaged by distension that they fail in their function and recover only slowly over a period of weeks. Histological evidence of such distension in the form of dilated capsular spaces and grossly dilated tubules is not a common finding in blackwater fever anuria."

8. "Although the urine passed in the immediate post-anuric and recovery phases occasionally contains massive deposits, 'made up of tarry material' (WAKEMAN, 1929) [this *Bulletin*, 1929, v. 23, 1015], it is often perfectly clear and relatively free from casts and other debris."

It is argued that the intense alkali dosage now advocated may have a depressing effect in blackwater fever, both on kidney function (evidence being adduced from the renal lesion associated with the dehydration and salt depletion of persistent vomiting and alkalosis) and generally (since patients with damaged kidneys are more liable to develop alkalosis). Nevertheless "alkaline treatment may be useful for individual cases where acidosis is threatened or has developed, or where a mild saline diuretic would be of value." If alkaline therapy is to be used it must be controlled, by measurement of plasma CO_2 or by the reaction of the urine after moderate administration, say 15 gm., of alkali: if the alkali reserve rises fast and the urine reaction does not change, then continuation of alkaline treatment is not indicated."

The renal lesion is next considered. A condition resembling "shock" is seen: the blood pressure "is usually low in the early stages of anuria" [but not in the 5 cases figured], oliguria and nitrogen retention develop, with failure to secrete a concentrated urine: "the changes in the kidney are congestion of the medullary vessels, relative 'anaemia' of cortex, including glomeruli; degenerative changes in the tubular epithelium, especially in the region of the ascending loop of Henle and the distal convoluted tubules; the presence of haemoglobin products or haemoglobin-stained casts in the tubules."

This state, for which the name "tubulo-vascular renal syndrome" is suggested, is seen in many other conditions, such as incompatible transfusion, crush syndrome, alkalosis, septic abortion, concealed accidental haemorrhage, cholera, yellow fever, sulphonamide haemoglobinuria, mercurial and bismuth poisoning, and "has been exactly reproduced in rabbits" by lithium urate and in rats by acid sodium phosphate.

Some suggestions are given for the probable mechanism of the renal lesion [as detailed in abstract of the paper by MAEGRAITH & FINDLAY, below], together with some possibly fruitful lines of research.

In the discussion, Dr. A. C. HOWARD, Dr. A. C. de B. HELME, Dr. H. S. STANNUS and Dr. C. C. CHESTERMAN spoke. Brigadier SINTON suggested that the altered distribution of renal blood flow might be caused by pressure on arteries due to swelling of the tubular epithelium: he advocated that before alkali therapy be condemned entirely, a controlled series of trials by the alternative case method should be made, as Colonel Maegraith had suggested.

In reply to a question by Sir Philip MANSON-BAHR about blood transfusion, Colonel Maegraith stated that this was "a common factor in many of the West African cases," but that they had refrained from using it until the oxygen carrying power had fallen to a dangerous level. *E. G. L. Bywaters.*

MAEGRAITH, B. G. & HAVARD, R. E. **Dangers of Intensive Alkali Treatment in Blackwater Fever.** *Lancet.* 1944, Sept. 9, 338–9. [42 refs.]

This is a summary of data and arguments which are detailed at slightly greater length in the paper by MAEGRAITH abstracted above.

E. G. L. Bywaters.

MAEGRAITH, B. C. & FINDLAY, G. M. **Oliguria in Blackwater Fever.** *Lancet.* 1944, Sept. 23, 403–4. [19 refs.]

The views expressed in this paper are based on the study of 35 cases of blackwater fever with renal insufficiency observed in the West Africa Command, 1941–1943. The arguments regarding therapy have been given rather more fully in the paper by MAEGRAITH abstracted above.

The blockage of the renal tubules with débris and haemoglobin products is not the deciding factor in the production of oliguria. Observation of the reactions of the skin to stroking (failure in severe cases to develop almost any skin vascular responses) and of the hepatic vessels at autopsy (centrilobular congestion and necrosis) suggest that "peripheral vascular atonic collapse with subsequent redistribution of intrarenal blood-flow and depression of glomerular filtration" may play a part in the production of oliguria.

The changes found in the renal epithelium are thought to be partly due to anoxia. *E. G. L. Bywaters.*

CALEWAERT, D. Pathogénie et traitement de l'hémoglobinurie des pays chauds. [**The Pathogenesis and Treatment of Blackwater Fever.**] *Rec. Travaux Sci. Méd. Congo Belge.* Léopoldville. 1944, Jan., No. 2, 151–6. [14 refs.]

The author rejects the view that acidosis is one of the causes of the haemoglobinuria of blackwater fever since it is so often present in people who have not haemoglobinuria. His view is that the intravascular haemolysis is due to lowered tension of the blood. He has measured the surface tension of the blood in normal persons and in patients with blackwater fever by means of the apparatus of Lecomte du Noüy [interfacial tensiometer] and distinguishes two measurements: (*a*) relative dynamic surface tension (a rough approximation); (*b*) static surface tension which is the true surface tension. In normal blood these were, respectively, 57–58 dynes/cm. and 56 dynes/cm.; in blackwater fever the corresponding figures were 50–52 dynes/cm. and 45–50 dynes/cm. This lowered tension produces haemolysis. It has been found that the addition of a trace of soap to an isotonic solution of sodium chloride containing red blood corpuscles produces haemolysis, and the author thinks that malaria parasites have an identical action by communicating their low surface tension to the red cells. Certain apparently related observations are mentioned in support of this theory: the surface tension of the blood is relatively low in young people and they are particularly prone to get haemoglobinuria; haemoglobinuria is

associated with fever and in fever of any kind the surface tension of the blood is lowered; quinine hydrochloride (but not sulphate or formate) lowers the tension.

Treatment should be in accordance with this view; on the first day three injections of 150–200 cc. of 3 per cent. sodium bicarbonate in glucose saline i.v. and 3–4 injections of 0·05 gm. of ephedrine hydrochloride (or ephetonine) subcutaneously; on the second day two injections of sodium bicarbonate and 2–3 injections of ephedrine; on the following days the treatment is adjusted according to the symptoms. In mild cases, with the urine more or less alkaline, sodium bicarbonate is given by mouth.

The author claims that the moment when the urine will become clear can be predicted by measuring the surface tension of the blood.

Both ephedrine and sodium bicarbonate are necessary; the suspension of either is apt to cause a return of the haemoglobinuria.

In very severe cases blood transfusion is indicated. *J. F. Corson.*

TRYPANOSOMIASIS.

i. MacKichan, I. W. **Rhodesian Sleeping Sickness in Eastern Uganda.** *Trans. Roy. Soc. Trop. Med. & Hyg.* 1944, Aug., v. 38, No. 1, 49–60, 1 map.

ii. Duke, H. L. **Rhodesian Sleeping Sickness.** [Correspondence.] *Ibid.* Nov., v. 38, No. 2, 163–5.

i. This is an account of an outbreak of Rhodesian sleeping sickness in the Uganda Protectorate which appears to have begun in November 1940; up to the middle of 1943 there had been 2,432 cases and 274 deaths. The early cases seem to have been infected near Jinja and afterwards the disease appears to have spread eastwards to beyond the Kenya border. The peak of the epidemic was reached in March 1942, when over 100 new cases a month were seen and over 1,000 were under treatment; afterwards the number of new cases decreased and at the time of writing they averaged 10 to 20 a month.

Clinically the disease resembled Rhodesian sleeping sickness but laboratory animals were not inoculated until December 1941; it was then found that the trypanosome was *T. rhodesiense.* The author states that this is apparently the first time that *T. rhodesiense* has been isolated in Uganda

Three species of *Glossina* are found in the area—*G. pallidipes, G. palpalis fuscipes* and *G. brevipalpis*; the last species exists in very small numbers. The distribution of these flies has been investigated and Chorley has shown that *G. palpalis fuscipes* breeds in the evergreen forest as far as 10 miles from permanent water within the 50-inch rainfall contour. The distribution of *G. pallidipes* somewhat overlaps that of *G. palpalis fuscipes.* The author thinks that the evidence points to *G. pallidipes* as the most important, if not the only, vector of *T. rhodesiense* in this outbreak. Rats were infected with polymorphic trypanosomes by wild *G. pallidipes* and the blood of one of them infected a volunteer. The flies were caught and fed on the rats by C. H. N. Jackson of the Tsetse Research Department, Tanganyika Territory; about 3,500 flies fed on 50 rats and 5 of the rats became infected with polymorphic trypanosomes. Their blood was injected into five volunteers, four of whom showed no reaction up to the 10th day, when they were given a course of antrypol; the fifth man developed a painful swelling at the site of the injection on the 4th day, his temperature rose to 102°F. on the 5th day, and trypanosomes were found in his blood on the 6th day. He was then treated with antrypol. [Subinoculation

of animals from this volunteer is not mentioned but it is almost certain that he was infected with *T. rhodesiense* and not *T. gambiense*.] The author states that *T. brucei* was found some years ago in a dog at Kiterera in this area, and, more recently, some dogs at Jinja have been found infected. Two rats were infected with polymorphic trypanosomes by *G. palpalis fuscipes* caught in the Kiterera area and the blood of one was inoculated into a volunteer but failed to infect him. Other rats were infected with polymorphic trypanosomes by *G. palpalis fuscipes* caught in Buvuma Island; one strain was sent to Tinde, Tanganyika Territory, but failed to infect volunteers there.

As regards the origin of the epidemic the author thinks that the infection was introduced into Uganda by labourers coming from Tanganyika Territory, west of Lake Victoria.

ii. The author [this *Bulletin*, 1917, v. 9, 31] found heavy salivary gland infections in 3 per cent. of 65 wild *Glossina pallidipes*, caught on the escarpment above Lake Albert; this is an unusually high gland infection with polymorphic trypanosomes of tsetse of any species.

He also points out that *Trypanosoma rhodesiense* was found in Uganda several years ago [see DUKE, this *Bulletin*, 1931, v. 28, 346; 1933, v. 30, 433; 1934, v. 31, 566]. *J. F. Corson.*

WILLIAMS, W. L. **On the Activity of the Tsetse,** *Glossina pallidipes* **and other Tsetse during a 24 Hour Period.** *Rhodesian Agric. J.* 1943, v. 40, No. 6, 368–70. [Summary taken from *Rev. Applied Entom.* Ser. B. 1944, Sept., v. 32, Pt. 9, 162.]

On 28th–29th October, 1943, continuous patrols, each of two hours' duration, were made over a period of 24 hours with a donkey near a pontoon across the Busi River in Portuguese East Africa about seven miles from the Southern Rhodesian border with the object of determining the diurnal and nocturnal activity of *Glossina pallidipes*, Aust., and comparing the findings with those of Vanderplank in Tanganyika and Chorley and Hopkins in Uganda. It was also intended to make incidental observations on the activity of *G. brevipalpis*, Newst., and *G. morsitans*, Westw. Only flies that alighted on the donkey were caught. The night was moonless. The fact that the largest catch was made in the last hour showed that the killing of tsetses during the patrol had little effect on the local population. In all, 42 males and 16 females of *G. pallidipes* were taken, nearly all between 5 and 8 a.m. and 5 and 6.20 p.m. South African Standard Time. Large numbers of *G. brevipalpis*, about 99 per cent. of which were males, were observed on the road between 5 48 and 6.30 p.m. and 5 and 6 a.m., but they were not greatly attracted to the donkey. Only two individuals of *G. morsitans* were seen, and these were the only tsetse flies taken between 10 a.m. and 5 p.m. Air temperatures during the hottest part of the day inhibited activity, but the night temperature was never low enough to do so.

JACK, R. W. **The Life Economy of a Tsetse Fly [exemplified by** *Glossina morsitans*, **Westw., in S. Rhodesia].** *Rhodesian Agric. J.* 1944, v. 41, No. 1, 25–38.

FAIN, A. La ponction sternale comme moyen de diagnostic à la période nerveuse de la maladie du sommeil à *T. gambiense*. [**Sternal Puncture as a Means of Diagnosis of the Nervous Stage of Gambian Sleeping Sickness.**] *Rec. Travaux Sci. Méd. Congo Belge.* Léopoldville. 1944, Jan., No. 2, 127–9.

Sternal puncture was performed in 20 sleeping sickness patients in the Belgian Congo; clinically the disease was in an advanced stage and this was confirmed by lumbar puncture. Eight of the patients had been given Bayer 205 [Germanin]

prophylactically from 2 to 9 months before but it is thought that they were already infected when they received the prophylactic injections. In all cases no trypanosomes were seen on repeated examination of the blood and (except one) gland juice, but trypanosomes were found by sternal puncture in 11 of the 20 patients, in numbers varying from 1 to 46, the higher numbers being found in children. It is concluded that this method is useful and justifiable in such cases to confirm the diagnosis. [See also this *Bulletin*, 1938, v. 35, 704 ; 1939, v. 36, 216 and 217 ; 1940, v. 37, 402 ; 1941, v. 38, 304 ; and 1944, v. 41, 14.]

J. F. Corson.

SIEYRO NIETO, L. Contribución al diagnostico por el laboratorio de la tripanosomiasis humana. [**Laboratory Diagnosis of Human Trypanosomiasis.**] *Med. Colonial.* Madrid. 1944, June 1, v. 3, No. 6, 373–92, 3 charts. [22 refs.]

During a campaign against Gambian sleeping sickness in Santa Isabel, Fernando Po, the author made observations on the blood and cerebrospinal fluid which he thinks may assist in the diagnosis, often difficult, of the disease.

The blood picture.—Hyperleucocytosis [above 8,000 per cmm.] was present in 50 per cent., leucopenia in 34 per cent., and a normal count in 16 per cent. There was usually lymphocytopenia. An interesting observation was that the number of eosinophils was below the normal in 83 per cent. of patients, although filariasis, and various intestinal worm infestations, were very common. The average number of blood platelets in " normal " natives was found to be 230,000 per cmm. while in sleeping sickness it varied from 300,000 to 370,000.

The coagulation time.—The average normal time was 6·5 minutes ; in sleeping sickness it was 4·5 minutes.

The serum calcium.—In normal natives the average content was 10·5 mgm. per 100 cc. ; in sleeping sickness it was 9·12 mgm.

The cerebrospinal fluid.—The author used Sicard's method for the total protein, Nonne-Apelt, Pandy and Weichbrodt tests for globulin and Lange's colloidal gold reaction, and counted the cells in a Fuchs-Rosenthal counting chamber. He agrees with ZSCHUCKE [this *Bulletin*, 1933, v. 30, 432] that the total protein estimation is less valuable than the tests for globulin and, especially, than the colloidal gold test. With a constant total protein he has found marked changes to occur in the globulin reactions. He also considers the cell count more useful than the total protein figure, but with a normal cell count and normal total protein, there may be an abnormal gold curve ; he accepts the colloidal reaction in such a case as indicating a pathological fluid and found that this reaction gave the only indication of involvement of the central nervous system in 27 per cent. of cases. [See also FAIRBAIRN, this *Bulletin*, 1934, v. 31, 559.]

J. F. Corson.

EAGLE, H., HOGAN, R. B., DOAK, G. O. & STEINMAN, H. G. **The Therapeutic Efficacy of Phenyl Arsenoxides in Mouse and Rabbit Trypanosomiasis** (*Tryp. equiperdum*). *Pub. Health. Rep.* Wash. 1944, June 16, v. 59, No. 24, 765–83, 3 figs. [14 refs.]

This paper describes a continuation of studies on the phenylarsenoxides. Previous papers (EAGLE, HOGAN, DOAK and STEINMAN, *J. Pharm. & Exper. Therap.*, 1940, v. 70, 221 ; *ibid.*, 1942, v. 74, 210) had dealt with their toxicity and spirochaeticidal action. In the present work 54 phenylarsenoxides were assayed for their trypanocidal action *in vitro* upon *T. equiperdum* ; these tests were made at room temperature (23°C.), allowing a period of 2–4 hours' incubation before the result was read. [The technique described by YORKE and MURGATROYD (this *Bulletin*, 1931, v. 28, 350) might have yielded results which

corresponded more closely to what happens *in vivo*]. Twenty-six compounds were studied for their toxicity and trypanocidal action in mice and four were studied in rabbits. [Curative action of the compounds was judged by survival of the mice for 30 days rather than by examination of the blood for trypanosomes; some of the mice may have died from other causes.] Various phenyl arsonic acids were also examined.

Although there was a rough correlation between the trypanocidal and spirochaeticidal activity of phenyl arsenoxides, the two assays were sometimes wholly discrepant. There was a sufficiently close correlation between the trypanocidal activity *in vitro* and *in vivo* to justify the use of the former as a screening procedure with respect to therapeutic activity upon spirochaetes. Weakly active compounds were, however, usually more effectively trypanocidal *in vivo* than would have been expected from their direct action *in vitro*.

Phenyl arsenoxides regularly gave a more favourable chemotherapeutic index in the treatment of mouse trypanosomiasis than the corresponding arsonic acids. The chemotherapeutic index (LD.50 : CD.50) of nine arsonic acids varied between 1·4 and 9, to be compared with indices of 3·5 to 26 for the corresponding arsenoxides. In the treatment of rabbit trypanosomiasis, the difference was not so marked, but was again in favour of phenyl arsenoxides.

Various types of substituents have had fairly regular effects on the trypanocidal activity, toxicity and thus on the chemotherapeutic index of phenyl arsenoxide.

(*a*) Nitro (NO_2) chloro (Cl), methyl (CH_3), amino (NH_2), and hydroxyl (OH) groups had no significant effect on the activity : toxicity ratio.

(*b*) Acidic groups (COOH or SO_3H) usually caused a striking decrease in trypanocidal action.

(*c*) Amide-substituted compounds (—$CONH_2$), or those with a substituent containing a terminal acetamide (—CH_2CONH_2) group, were uniformly low in toxicity, and usually had a favourable activity : toxicity ratio, varying up to 7·4 times that of the unsubstituted compound. In the treatment of mouse trypanosomiasis the chemotherapeutic index (LD.50 : CD.50) of such compounds varied between 2·8 and 28·3, the corresponding index for the unsubstituted phenyl arsenoxide being less than 1.

(*d*) Substitution of an amide hydrogen with —CH_3 or —C_2H_5 (*e.g.*, —$CONH.CH_3$) reacted unfavourably on the activity : toxicity ratio of the compound ; but similar substitution with a group containing a terminal hydroxyl, acetamide, or nitrile (—CH_2CN) linkage did not adversely affect the favourable effect of the amide group.

The most promising compound of the present series was *p*-butyric acid derivative of phenyl arsenoxide, $OAs.C_6H_4.CH_2.CH_2.CH_2.COOH$. This compound was an exception to the rule that acidic-substituents (*e.g.*, —COOH) inhibited trypanocidal activity, and its activity *in vitro* was about half that of phenyl arsenoxide. The LD.50 value in mice on single intraperitoneal injection was 33·4 per kgm., the CD.50 value in that species was 1·6 mgm./kgm., and the LD.50 : CD.50 ratio of 20·5 was the third highest in the entire series. In rabbit-trypanosomiasis treated by four consecutive daily injections, the LD.50 value was 16 mgm. per kgm., the CD.50 was 3·6 mgm./kgm. and the LD.50 : CD.50 index was 4·4, the highest of all the compounds tested. The favourable chemotherapeutic index of this compound is due to its unusually high trypanocidal activity (for this type of compound) without undue toxicity.

This compound is also said to be effective against strains of trypanosomes resistant to most other arsenicals. [This paper describes a very extensive investigation into the relation between chemical structure and trypanocidal action and it should be studied in the original by all those interested in this subject.] *F. Hawking.*

LUIS DAO L. La punción esplenica como medio de diagnostico en un caso de enfermedad de Chagas. [**Spleen-Puncture in Diagnosis of Chagas's Disease.**] *Bol. Hospitales.* Caracas. 1944, Jan.–Feb., v. 43, No. 1, 10–17, 1 fig.

The patient, an agricultural worker of 40 years, had been living for some years in places where "chepitos" [a local name for Reduviid bugs] were abundant. He had been having fever of a low type, unaccompanied by shivering or sweating, for about three years, and he complained of great weakness. During recent months however, the fever was more acute with both shivering and sweats. On coming under the author's observation he was seen to be pale and anaemic and to have some swelling of the face. His spleen was much enlarged and the liver extended to two fingers'-breadths below the costal margin. His blood contained 2,624,000 red cells and 2,200 white per cmm., haemoglobin 45 per cent., colour index 0·8. Polymorphonuclears were 34 per cent., lymphocytes 36, large mononuclears 20, eosinophiles 8 and basophiles 2 per cent. Kahn gave a 3 *plus* (there were indications of old venereal disease), *P. vivax* was seen in smears, but no trypanosomes; the faeces showed ova of *Necator*. Xenodiagnosis was undertaken and later proved positive for *T. cruzi*; in the meantime spleen puncture was performed and trypanosomes and gametes of *P. vivax* were seen. The patient was thus found to be suffering from syphilis, malaria, Chagas's disease and ankylostomiasis.

Spleen puncture is, therefore, a useful measure for diagnosis of Chagas's disease and is doubly useful in a country where kala azar also occurs.

H. Harold Scott.

ZAMBRA, E. R. La enfermedad de Chagas: su historia. Estudio de la enfermedad de Chagas en el Norte Santafesino (R. Argentina). "El signo" o "Signal de Romaña." [**Chagas's Disease: Its History. A Study of the Disease in Northern Santa Fé (Argentine Republic). Romaña's Sign.**] 95 pp., 9 figs. 1944. Buenos Aires.

The first part of this booklet, giving the history of American trypanosomiasis from the time of its being first brought to notice by Carlos Chagas in 1909 in the State of Minas Geraes, is good. The author relates, with full documentary evidence in support, how the range of its existence was observed to become wider and wider and how more and more reservoir hosts and transmitters were discovered—all most interesing, but not new to diligent readers of good modern text-books on tropical medicine or of this *Bulletin*. The remainder of the booklet, in the opinion of the reviewer at least, serves little useful purpose. Though amply documented, the extracts and the comments upon them are purely polemical and a good deal of it little else than eulogy and fulsome flattery of Professor Salvador Mazza and abuse of Dr. Romaña.

H. Harold Scott.

LEISHMANIASIS.

BURKE, E. & CHAKRAVARTY, K. C. **A Preliminary Note on the Treatment of 21 Cases of Kala-Azar with Sodium Antimony Gluconate (with special reference to its Suitability for Mass Administration on Tea Estates).** *Indian Med. Gaz.* 1944, June, v. 79, No. 6, 268–71, 7 figs.

The authors, who have had considerable experience of kala azar in Assam tea gardens, give an account of their treatment of 21 cases of this disease with sodium antimony gluconate (stibatin of Glaxo Laboratories). The product was

supplied in rubber-capped bottles each containing 30 cc. of a clear sterile liquid, each cc. of which contains 20 mgm. of pentavalent antimony. Various doses were tried, both intravenously and intramuscularly, till, finally, it was decided that a daily dose of 1 cc. could be given for each year of age. Above 15 years of age the dose was limited to 15 cc., though the view is expressed that 20 cc. daily could with safety be administered. The full course recommended by the makers is 60 cc., but the authors have given as much as 100 cc. in 7 days. In young children the injections were made intramuscularly. They are quite painless and therapeutically as effective as the intravenous injections, which are also free from unpleasant reactions. A cure was obtained in all the 21 cases, a result which leads the authors to remark that they believe the drug to be as good as, if not superior to, any other antimonial kala azar remedies.

C. M. Wenyon.

KIRK, R. & HENRY, A. J. **Observations on the Toxicity of Stilbamidine.** *Ann. Trop. Med. & Parasit.* 1944, Sept. 30, v. 38, No. 2, 99–118. [30 refs.]

In 1939 and 1940, 44 cases of kala azar in the Sudan were treated successfully with stilbamidine. Large stocks of stilbamidine were laid in and were used during the subsequent period when communication with Britain was difficult; but the clinical results gradually became less satisfactory owing to the increasing frequency of toxic reactions and to the incompleteness of the response to therapy.

The immediate reactions recognized as occurring after the intravenous injection of the aromatic diamidine compounds include a severe transient fall of blood pressure, formication, sweating, breathlessness, vomiting, etc., all of which pass off in a few minutes. In some cases thrombosis of the veins at the site of injection occurred. But after a time, in the Sudan, other toxic effects began to be observed. These effects did not develop until 1–3 months after the completion of treatment, and there were two main types.

(1) *Nervous sequelae.*—(*a*) Paraesthesia, anaesthesia, formication, and hyperaesthesia over the distribution of the trigeminal nerve, and sometimes swelling of the face. (*b*) Peripheral neuritis of the legs and foot-drop. (*c*) In rare cases, epilepsy or mania.

(2) *Fatal delayed poisoning.*—The patient who had previously been well, was suddenly attacked by nausea and vomiting, passed into coma, and died in 1–4 days.

The storage and excretion of the compound were studied by means of the method described by HENRY and GRINDLEY [this *Bulletin*, 1943, v. 40, 122] to estimate the drug in the excretions. Owing to the difficult conditions under which the investigations were made, the data obtained were less complete than was desired. However, it was shown that stilbamidine tends to be rapidly absorbed by the tissues and that it is released only slowly for excretion. Two patients were given nine doses of 50 mgm. (1 mgm. per kilo.) intravenously on alternate days, and the urine was examined. During the period corresponding to the first three doses only about 15 per cent. of the dose was excreted in the urine; then the excretion increased and by the 7th or 8th dose, about 80 per cent. of the last dose was excreted; within one day after the last dose, 200 mgm. had been excreted out of a total dosage of 450 mgm. Fifteen minutes after the ninth dose, the concentration in the plasma was about 0·7 mgm. per 100 cc., and five days later, none could be detected in the plasma ($<0{\cdot}125$ mgm.). A few hours after the ninth dose, the cerebrospinal fluid, perspiration and sputum contained no detectable drug. The absence of the drug from the spinal fluid indicates that it is not likely to be effective against trypanosomiasis of the central nervous system. Five days after the last dose, the urine contained

only traces of the drug, and these were still present after 25 days. [The absorption and excretion of stilbamidine resemble those of mepacrine in many ways. Mepacrine is another basic substance which tends gradually to accumulate in the tissues during the daily administration of small doses, and which is slowly liberated (in part) for excretion in the urine.]

The above investigations on the excretion of stilbamidine were discontinued because evidence accumulated that the toxic symptoms were due to chemical changes in the drug. Thus, one series of 14 cases was treated with solutions freshly prepared on each occasion ; 7 were cured, 4 were lost to sight, and 3 died, probably from kala azar without any suspicion of poisoning. Another series of 18 cases was treated with a solution 1–4 weeks old (exposure to light unknown); 3 were cured, 5 were observed only for 1½–4 months, and 10 died, many of them with the late toxic symptoms described above. Work by FULTON and YORKE [this *Bulletin*, 1943, v. 40, 23] showed that solutions of stilbamidine become more toxic to mice on exposure to light ; this finding was confirmed in Khartoum. Chemical changes appear to take place especially at the double bond of the stilbene radicle, but their exact nature is still uncertain. In mice and rabbits, poisoned by these solutions which had deteriorated, there was much tubular nephritis, and the livers showed congestion with blood and fatty degeneration. Opportunities to obtain tissue by autopsies of the human cases of poisoning were very limited ; evidence of renal and hepatic injury was found in a limited number of specimens but its significance was uncertain.

It is concluded that the serious toxic effects which had been observed were due mostly to the early chemical changes which occur in stilbamidine when solutions are exposed to light. [This is an important paper which should be studied in the original by all interested in this subject.] *F. Hawking.*

FULTON, J. D. **The Therapeutic Action of some Newer Aromatic Diamidines on** *Leishmania donovani* **Infections of Golden Hamsters** (*Cricetus auratus*). *Ann. Trop. Med. & Parasit.* 1944, Sept. 30, v. 38, No. 2, 147–58. [22 refs.]

Hamsters were infected with leishmania, isolated from an Indian case of kala azar in 1939. Six weeks later a portion of the spleen was sampled, and treatment commenced a week later. It was found that ten doses of 20 mgm. per kilo. of stilbamidine, given in solution by intraperitoneal injection three times a week, cured 13 out of 15 animals. [Stilbamidine is 4 : 4′-diamidinostilbene ; the maximum tolerated dose in mice is 1·0 mgm. per 20 gm..] 4 : 4′-Diamidino-2-hydroxy-stilbene (max. tol. dose in mice, 1·0 mgm.) is equally effective therapeutically, *i.e.* 20 mgm. ten times cured practically all the animals. The monomethyl and dimethyl derivatives of stilbamidine are also curative, but they are not so effective as stilbamidine against leishmaniasis, although very effective against *Trypanosoma congolense* in mice. 4 : 4′ diamidino tolane, and 4 : 4′-diamidino diphenyl urea showed little activity, while the corresponding diphenyl sulphone and diphenyl hexane derivatives failed to influence the course of the infection. *F. Hawking.*

BALL, D. & RYAN, R. C. **Cutaneous Leishmaniasis.** *Bull. U.S. Army Med. Dept.* 1944, Aug., No. 79, 65–73, 1 fig.

The paper gives an account of 499 proved cases of cutaneous leishmaniais in American forces in the Middle East. The exact locality is not mentioned ; it was presumably in Persia or the near vicinity, as it took ten days for troops to reach it from India, while one of the authors made a trip to Bagdad, where he observed that the scars left by treated sores in that city were more conspicuous

than those following cure in the present series of cases. Of the 499 cases, 102 were transferred to other stations before treatment, leaving 397 under observation. These had a total of 1,769 lesions, the average number per case being 4·3. The minimum number of lesions was one, and the maximum 29. The majority of patients were treated and cured by intravenous injections of neostam [Burroughs Wellcome & Co.] given twice a week. The first three doses were of 0·05, 0·1 and 0·15 gm., subsequent ones being of 0·2 gm. except in a few cases which reacted unfavourably when the dose of 0·15 gm. was not exceeded. The total quantity given to each patient averaged 1·14 gm. Toxic reactions, which usually appeared in from 45 to 90 minutes, consisted of mild nausea, severe projectile vomiting, diarrhoea and, in three cases, collapse. These reactions were quickly relieved by giving morphine 0·011 gm. [1/6 grain] hypodermically. When the maximum dose of neostam was reduced to 0·15 gm. given at noon, the mid-day meal being withheld, the reactions were reduced to 0·83 per cent. in the last 950 injections. The unpleasant taste following the injections was prevented by chewing gum. Of 221 cases treated by intravenous neostam 208 were cured, 14 being still under treatment at the time of writing. The minimum time for cure was two weeks and the maximum 20 weeks—an average of 14·5 weeks. There were no failures Of 138 cases treated by infiltrating a sore with 1 cc. of a 1 per cent. berberine sulphate solution 31·8 per cent. were failures. Ethyl chloride spraying was successful in curing a few very early cases. X-ray therapy was tried in a few patients ; of 10 who were followed, 9 were cured—the one failure was subsequently cured by neostam. The conclusion is that neostam is effective in the treatment of cutaneous leishmaniasis. Other methods of treatment are less satisfactory, though effective in certain cases. *C. M. Wenyon.*

BELTRÁN, E. & R. LARENAS, M. Acción de algunas sulfamidas sobre *Leishmania brasiliensis* en cultivo, y sus contaminaciones bacterianas. [**Action of certain Sulphonamides on** *L. braziliensis* **Cultures and their Bacterial Contaminations.**] *Rev. Inst. Salubridad y Enfermedades Trop.* Mexico. 1944, Mar., v. 5, No. 1, 53–7. English summary.

The authors have tested the action of sulphanilamide, sulphapyridine and sulphadiazine on cultures of *Leishmania braziliensis*. They have found that in a concentration of 1/1,000 these substancesare without lethal action on the flagellate forms of leishmania, though in a concentration of 1/100 they are lethal. It was thought that in a concentration of 1/1,000 they might be used to get rid of bacterial contaminations in cultures of leishmania but they were not lethal to the bacteria. The authors admit that it is impossible to draw any conclusions regarding the possible therapeutic value of the drugs tried.

C. M. Wenyon.

FEVERS OF THE TYPHUS GROUP.

ANDREWES, C. H., KING, H., VAN DEN ENDE, M. & WALKER, J. **Substances chemotherapeutically active against Typhus Rickettsiae.** *Lancet.* 1944, June 17, 777–81.

[This very important paper should be closely studied by all who are interested in the chemotherapy of the rickettsial and virus diseases. In a summary it is impossible to do justice to the remarkable investigation described by the authors. The paper itself is a condensed report of a very extensive and highly skilled,

not to say dangerous, series of experiments ; and although these have not yet resulted in the discovery of a cure for the typhus fevers, they justify hopes that the authors may be blazing the trial for far-reaching developments in this connexion.]

In the course of tests of a series of compounds for activity against viruses and rickettsiae it was found that V 147 (*p*-sulphamidobenzamidine hydrochloride) had a definite action in mice infected with typhus rickettsiae. The compound is not a sulphonamide in the popular sense of the term and its action was found to be quite different from that of the sulphonamide group. Most of the work was done with the Wilmington strain of murine rickettsiae, but Tunisian and Breinl epidemic strains were used to confirm the results obtained.

Suspensions of the strains were prepared from the lungs of mice which had been inoculated intranasally with infective material obtained by repeated lung passages through mice. The methods are fully described. During, and for about an hour after, the intranasal injections the mice were kept in the inoculation box devised by van den Ende ; in this way, the risk of droplet infection was greatly diminished so that only one attack of typhus fever occurred among 9 non-immune persons who inoculated several thousands of mice over a period of 18 months, whereas, before the use of the box, all the 5 persons engaged in the same work had been attacked within a month of commencing the inoculations.

By experiments, it was found possible to arrive at a strength of the infecting suspension which caused the formation of visible dark-grey discrete foci on the surface of the lungs of the infected mice after seven days. The number of the foci gave a quantitative indication of the intensity of the reaction in the animals, provided that careful control was exercised over the administration of the anaesthetic. In one series of 14 mice inoculated with the same dilution of the suspension, the number of foci ranged from 85 to 135. The concentrated stock suspension retains its full infectivity for at least 4 months when kept at —77°C.

In one group of 5 mice treated by 6 intraperitoneal injections of 4 mgm. each of V 147—the drug being started two hours before inoculation, and administered twice daily—no foci were found, whereas control mice inoculated in the same way developed numerous foci.

By using different dilutions of the infecting suspension and different doses of the drug it was found that striking benefit resulted from the treatment. Appreciable benefit resulted when the administration of the drug was started after the infecting inoculation—even up to 42 hours after this inoculation.

Another drug, V 186 (*p*-sulphamidobenzamidoxime hydrochloride), which is very closely related to V 147, was equally effective, and in some respects was found to be preferable. Ten other drugs, differing slightly in their molecular structure from the above were also effective, but their suppressive doses approached more nearly to the maximum tolerated doses so that they were less satisfactory.

No less than 154 other drugs were tested, but although 84 of these were rather closely related to V 147 and V 186, all were found inactive in the maximum tolerated doses. It was, therefore, evident that any considerable change in the molecular structure led to a loss of the strictly specific anti-typhus properties of the effective drugs.

Further study is being made of the association between the structure of the compounds and their therapeutic power, and it is hoped that this will lead to clearer knowledge of their mode of action.

V 186 was also effective when given mixed with the food and when given subcutaneously, but V 147 was slightly less effective when given in the former way.

The drugs did not completely destroy the rickettsiae, as was shown by the fact that suspensions of the lungs of the treated mice were still infective, though very much less so than suspensions made from untreated mice.

The drugs were ineffective in the treatment of typhus-infected guineapigs.

Clinical trials carried out in North Africa and Naples have yielded very disappointing results ; there was great difficulty in providing that the treatment should be started within the first few days after the onset of the attacks, and the drugs, for unexplained reasons, were toxic for occasional patients.

John W. D. Megaw.

VIÑES IBARROLA, D. J. Tifus exantematico. Influencia del medio en su difusion. El complejo sanitario y el complejo social. [**Exanthematic Typhus. The Influence of Environment on its Spread. The Sanitary and Social Complexes.**] *Rev. Sanidad e Hig. Pública.* Madrid. 1944, Jan.–Feb., v. 18, No. 1, 1–23, 1 map.

The author discusses 26 outbreaks of typhus fever, in which altogether 113 persons were attacked, in the Provinces of Zaragoza and Navarra during the years 1941–1943.

The paper deals chiefly with the special problems that arose in connexion with the campaign against the disease in the above two areas. Different methods of control were called for in rural as contrasted with urban regions and also in persons of high social status as compared with the poorer classes of the community. So many factors had to be taken into account that the selection of the most suitable plan of action made great demands on the versatility and tact of the officers of health. The relations between these officers and the private practitioners do not always seen to have been happy, especially in the large towns.

The Weil-Felix test was found invaluable in diagnosis, it was persistently negative in only one case ; but negative or weak reactions in the early stages of the illness were often wrongly interpreted by inexperienced practitioners, who were liable to regard these as excluding the diagnosis of typhus fever.

Early diagnosis, or at least suspicion, of the disease is stressed as being essential to success in preventing the spread of infection. *John W. D. Megaw.*

DING, E. Beitrag zur Frage der Tröpfcheninfektion bei Fleckfieber. [**Note on the Question of Droplet Infection in Typhus Fever.**] *Ztschr. f. Hyg. u. Infektionskr.* 1944, Mar. 23, v. 125, No. 5, 431–6. [25 refs.]

From 76 patients with confirmed typhus fever, smears were made daily of material obtained from scrapings of the mucosa of the nose and throat, and from sputum and aspirated salivary gland juice. Altogether about 13,000 specimens were made and stained by the methods of Castañeda, Machiavello, Giemsa, and Gracián. No rickettsiae could be detected after a thorough search of this extensive material.

Sputum and salivary secretion from patients who had catarrhal manifestations were injected intraperitoneally into 149 guineapigs, with completely negative results.

Scrapings from the tracheal mucosa of 8 persons, who had died of the disease 2–6 hours previously, were made and inoculated into 16 guineapigs, with equally negative results.

The possibility of symptomless infection of the guineapigs was excluded by attempts to make sub-passages with brain substance.

From the negative results the author concludes that transmission of infection from man to man by droplet infection cannot occur. *John W. D. Megaw.*

EYER, H. & RUSKA, H. Ueber den Feinbau der Fleckfieber-Rickettsie. [**The Minute Structure of Typhus Rickettsiae.**] *Ztschr. f. Hyg. u Infektionskr.* 1944, Mar. 23, v. 125, No. 5, 483–92, 10 figs. [12 refs.]

This paper is illustrated by 10 photographs made with the electron microscope and reproduced at magnifications of 25,000 diameters.

The features of the rickettsiae are very similar to those shown in the illustrations contained in the paper by PLOTZ and his collaborators [this *Bulletin*,1943, v. 40, 685] and in the paper by WEISS [this *Bulletin*, 1944, v. 41, 378].

The authors have arrived at the same conclusion as Plotz and his colleagues that the rickettsiae approach closely to bacteria in their structural features.

The material was obtained from the intestines of infected lice, and although it is stated that *Rickettsia prowazeki*, *R. quintana*, and *R. pediculi* were examined no mention is made of any differences in their appearance.

Great variations in shape and size of the organisms are shown in the photographs, but in the specimens examined the most numerous forms were of the bacilliform type (" pölstabe ") with a rounded dark shadow at each end of the organism suggesting an analogy with nuclei and called by the author " nucleoides." Some of the bacilliform organisms tended to be barrel-shaped. Next in order of frequency came rounded forms, most of which contained a nucleoide. There were a few smaller dark round forms which were regarded as nucleoides. Indications of cell division were seen in some of the bacilliform bodies.

One of the photographs shows a paratyphoid bacillus, which, apart from its much larger size, is strikingly similar to a bacilliform rickettsia.

John W. D. Megaw.

GALLARDO, E., SANZ, J. & PEREZ GALLARDO, F. Datos experimentales sobre el cultivo de la Rickettsia Prowazeki en la membrana vitelina del embrión de pollo. [**Experiences in the Cultivation of *R. prowazeki* in the Vitelline Membrane of Chick Embryos.**] *Rev. Sanidad e Hig. Pública.* Madrid. 1944, July, v. 18, No. 4, 269–73.

The authors describe the results obtained in the preparation of typhus vaccine by Cox's yolk-sac method. They began the work under the guidance of Dr. SNYDER of the Rockefeller Foundation.

Three strains of rickettsiae, from Madrid, Barcelona, and Murcia, were used. The starting material was a suspension of the brain of an infected guineapig ; the best results were obtained by killing the animals on the 1st or 2nd day of the fever. No difficulty was found in adapting the rickettsiae to vitelline-membrane cultivation. The eggs were used 5–7 days after inoculation. Incubation was at 37°C.

During a period of one and a half years, 10,887 eggs were used ; of these 4,316 died before the 5th day, and 451 were found contaminated.

More than 60 litres of vaccine were prepared—enough for 20,000 vaccinations.

A murine strain of Mexican origin, obtained from Mooser, gave results similar to those obtained with the historic strains ; the starting material in the case of the murine strain was a suspension made from tunica-vaginalis scrapings.

As many as 49 successive yolk-sac passages were made from one of the strains of *R. prowazeki*. *John W. D. Megaw.*

KLIGLER, I. J. & OLEINIK, E. **Presence of a Labile Toxin in Yolk-Sac Cultures of Rickettsia.** [Correspondence.] *Nature.* 1944, Oct. 7, 462.

The authors have investigated the properties of a highly-labile toxin whose occurrence in suspensions of rickettsia-infected organs of animals was discovered

by GIROUD [this *Bulletin*, 1938, v. 35, 791]. GILDEMEISTER and HAAGEN [*Deut. med. Woch.*, 1940, v. 66, 979] found that the same toxin occurred in yolk-sac cultures.

Suspensions of rickettsiae were prepared from yolk-sac cultures and centrifuged. The supernatant fluid when injected intradermally into rabbits produced necrotic skin lesions similar to those described by Giroud. This effect was observed even when the fluid was diluted 20–40 times and even in cases in which the supernatant fluid obtained from cultures of the murine strain failed to infect mice or rats.

Suspensions made from the sedimented rickettsiae were at least twice as toxic as those made from the supernatant fluid, and their toxicity was not reduced by alternate freezing and thawing repeated 7–8 times, although this process destroyed the infectivity of the rickettsiae.

The toxin was found both in human (louse-borne) and murine (flea-borne) strains, and its effects when injected intraperitoneally into rabbits, mice and rats, were similar, irrespective of which strain was used in its preparation.

The toxin, both in supernatant fluid and rickettsial suspensions, was completely inactivated by heating for half an hour at 56–60°C. but was not affected at 40°C. Culture suspensions, mixed with an equal volume of distilled water, lost their toxicity after being kept for three days at 37°C. Supernatant fluid and suspensions lost their toxicity after shaking with ether for half an hour, followed by complete removal of the ether.

Culture suspensions were rapidly frozen and thawed 7–8 times and then centrifuged; the toxicity of the supernatant fluid was greater than that of fluid obtained in the same way from untreated suspensions, although freezing and thawing of supernatant fluid free from rickettsiae caused some loss of toxicity. It appeared, therefore, that the process of freezing and thawing liberated toxins from the rickettsiae in amounts which more than compensated for the reduction caused by its action on the free toxins.

The work has not yet dealt with the question of the antigenetic properties of the toxins, but in the respects in which they have been studied those prepared from two strains of rickettsiae were indistinguishable from each other.

John W. D. Megaw.

SINGH, B. **A Report on Thirty Cases of Typhus Fever (Louse Borne).** *Indian Med. Gaz.* 1944, Apr., v. 79, No. 4, 146–50, 6 charts.

The author saw these cases while he was pathologist in the Persia-Iraq Field Force in 1943 when the disease was "raging in epidemic form" in certain localities among the civilian population. The attacks occurred sporadically among persons who had been in contact with the local population in the course of their duties.

In 3 mild cases the fever lasted 6–9 days; one of these patients had been vaccinated against typhus 3 months earlier with Cox's vaccine.

In 17 severe non-fatal cases drowsiness was apparent by the 3rd or 4th day; mental confusion and bouts of delirium were usually observed by the 5th or 6th day. Two of these patients escaped from hospital and were found wandering some distance away. The average duration of the fever in this group was 17 days.

Between the above groups came eight cases of moderate severity with an average duration of 14 days. One of the patients had been vaccinated six weeks before the onset.

There were three deaths, but one of these, which occurred on the 39th day, was attributed to tuberculous pleurisy and a severe staphylococcus infection. The two deaths regarded as due to typhus infection occurred on the 13th and 20th days; the patients were the only ones belonging to the 40–50 age group.

The agglutination titre with *Proteus OX19* rose to 1–500 or over in all the cases in which repeated tests could be carried out, but in only 12 cases a "diagnostic rise in titre" (1–250 or over) was observed before the 9th day; in the remaining 18 cases this titre was reached in 10–16 days.

The *OXK* titre was as high as the *OX19* titre in 9 of the 23 cases in which it was tested. The *OX2* titre was relatively low, but in three cases in which the maximum *OX19* titre was 1–250 the *OX2* titre rose to 1–500.

Leucocyte counts were made in 20 cases; the highest total observed was 10,000, the lowest 3,752, and the average 5,776.

The blood-sedimentation rate was tested in five cases; in the 1st week it averaged 15 mm. (Westergren); in the 3rd week 38 mm., and in the 9th week 12 mm.

John W. D. Megaw.

ASCHENBRENNER, R. Ueber urämische Zustände beim Fleckfieber. [**The Uraemic Condition in Typhus Fever.**] *Klin. Woch.* 1944, Jan. 22, v. 23, No. 1/4, 8–12, 1 chart. [Numerous refs.]

The author discusses at considerable length the causes of the great increase in the blood urea observed in some cases of typhus fever.

In one patient whose attack was mild and was followed by rapid convalescence the blood urea rose to 295 mgm. per cent. on the 9th day, and fell rapidly to normal within a period of eight days. There was a negligible degree of hypochloraemia, and only slight albuminuria. The urinary sediment showed numerous leucocytes, erythrocytes, and cylindrical casts.

In another patient who had severe cerebral symptoms, bronchopneumonia, and other complications, followed by death on the 17th day, the blood urea, which had been 35 mgm. on the 10th day, rose to 320 mgm. on the 17th day. The autopsy report stated that the kidney changes did not amount to glomerulonephritis. In this case also albuminuria was slight; on the 13th day a few cylindrical casts, erythrocytes and leucocytes were found in the urine.

In still another patient who had severe cerebral symptoms the blood urea was 41 mgm. on the 10th day and rose to 292 mgm. on the 14th day, when it was found that his bladder was enormously distended and nearly 4 litres of urine were withdrawn by catheterization. Within 24 hours the blood urea had fallen to 59 mgm., and by the 17th day it was only 34 mgm.

There were no clinical indications of the increase in the blood urea, which is called by the author a "uraemic condition" and is regarded as differing sharply from a hypochloraemic uraemia.

The only explanation offered by the author is an increased production and diminished excretion of urea; the diminished excretion being due to damage to the kidney of an inflammatory or "functional" nature.

John W. D. Megaw.

RAETTIG, H. Gibt es Fleckfieberrückfälle? [**Do Relapses occur in Typhus Fever?**] *Deut. med. Woch.* 1944, May 12, v. 70, No. 19/20, 274–5, 2 figs.

Among 500 cases of typhus fever observed by the author there were two in which the occurrence of a relapse was regarded as having been proved. Mention is made of two other cases in which a relapse was suspected; in both of these the initial fever lasted 12 days and terminated by crisis. After an afebrile period of three days there was a second rise of temperature; cerebral symptoms appeared within two days, and both of the patients died of circulatory failure.

It is mentioned that both of them had been given intravenous injections of convalescent serum early in the initial attack.

Fuller details, illustrated by temperature charts, are given of the two cases in which relapse was regarded as having been proved. In one of these the initial period of fever lasted about 11 days and ended by lysis. The temperature remained normal for two days, then there was low continued fever with a pulse rate of about 62–65 for five days. The temperature rose suddenly on the 19th day and remained high till the 29th day, when death occurred. The diagnosis of typhus fever was confirmed at the autopsy. A scanty " typical typhus rash " is described as having occurred on the 6th day, and on the 24th day a characteristic rash appeared on the trunk and limbs. This patient received 60 cc. convalescent serum on the 5th day.

In the second " undoubted " case, the initial fever lasted nine days and ended by crisis. A " low-grade typical rash " was seen on the 5th day. An afebrile period lasting 10 days was followed by a rapid rise of temperature to 39·7°C. High continued fever lasted for six days and was followed by a period of gradual lysis ; the temperature became normal on the 37th day.

The Weil-Felix titre was 1–400 on the 13th day, and 1–800 on the 34th day. These are the only Weil-Felix tests mentioned in the paper. This patient also was treated by convalescent serum—70 cc. on the 6th day.

[From the charts illustrating the reports of these two " proved " cases of relapse it is seen that the pulse rates during the initial attacks were decidedly low ; in the first case the rate exceeded 80 on only two occasions, in the second it ranged from 60 to 66 except for one occasion, although the temperature twice rose above 40°C. During the second febrile periods the pulse rates, though relatively low, were such as might be expected in attacks of typhus fever. Sceptics will hardly accept the evidence contained in the paper as proof of the occurrence of relapses in typhus fever. The question may even be raised of the possibility of the " relapses " being primary attacks caused by infection introduced with the convalescent serum.] *John W. D. Megaw.*

BRANDENBURGER, P. Zur Behandlung des Fleckfiebers. [**The Treatment of Typhus Fever.**] *Deut. med. Woch.* 1944, June 9, v. 70, No. 23/24, 329–31.

The author's views are based on an extensive experience in the treatment of typhus fever on the Eastern Front : often in very unfavourable conditions. The fatality rate was only about 8·5 per cent.

He adopts a refreshingly critical attitude towards the numerous claims that have been made by other German physicians for the efficacy of various drugs. He rightly points out that such claims must be received with caution, based as they have been on experience of a limited number of cases and without adequate controls.

He insists that the predominant lesions are those of the brain, and that the state of coma resulting from these cannot be influenced by any drugs. Some of the views expressed in this important paper are as follows :—Overdosage with such drugs as " cardiazol," " coramin," and strychnine, is quite useless ; circulatory failure does not play a leading part in causing the state of collapse so much emphasized by STURM [this *Bulletin*, 1943, v. 40, 381] and others. The fall in the blood pressure is not checked by camphor or adrenaline derivatives ; dosage with these drugs has often been suspended without the slightest adverse effect.

The myocarditis of typhus fever is influenced by digitalis and strophanthin to exactly the same degree as that due to other causes.

Calcium, sulphonamides and atebrin were not found to have any appreciable value. Hypertonic solutions of glucose given intravenously had no obvious effect on " cerebral pains." Injections for the relief of pain were avoided. Lumbar puncture often had an adverse effect on the encephalitic symptoms.

Convalescent blood, for practical reasons, could only be given by intramuscular injection; by this route it had no obvious effect. Injections of "cortiron" [desoxycorticosterone acetate] were seldom found to be effective. Vitamin therapy was widely used, but no striking benefit was observed.

Altogether, little help was obtained from drugs, and reliance was placed on well-organized and watchful care of the patients.

Plenty of liquid was given; the patients readily took two to three litres daily in the early stages, and after lethargy had set in great care was needed to prevent dehydration; when necessary intravenous salines with glucose were given at frequent intervals.

Fresh air, uniform ward temperature, and the avoidance of draughts, are important. Even in summer the wards should be heated on cold days.

Luminal [Phenobarbitone] sometimes aggravated the condition of delirium; good results were obtained from small doses of "scopolamin-eucodal ephetonin" given subcutaneously in the evening. ["Eucodal" (Merck) is dihydro-hydroxy-codeinone hydrochloride.]

When possible the patients were allowed to take their meals sitting up in bed and to pass urine and stools into a low commode by the bedside.

The diet was generous and varied, the tastes of the patients were humoured and they were encouraged to take and thoroughly masticate such articles of diet as rusks, bread and butter, fruits, etc. On this régime the condition of the mouth remained healthy and parotitis was almost unknown. "Invalid diets" were avoided, even in the frequent cases in which diarrhoea was a prominent feature.

John W. D. Megaw.

SCHULTEN, H. Das Fleckfieber bei Geimpften. [**Typhus Fever in Inoculated Persons.**] *Klin. Woch.* 1944, Jan. 22, v. 23, No. 1/4, 12–13, 1 chart.

The author admits the difficulty, especially in field conditions, of making a satisfactory estimate of the severity of attacks of typhus fever in inoculated, as contrasted with unprotected, persons.

His observations were made on 195 patients who had been vaccinated within the preceding six months—the method is not stated—and 100 control patients. The distribution figures are percentages.

	Very mild	Mild	Moderate	Severe	Fatal	Average duration
Inoculated	4	52	37	5	2	12·06 days
Controls	1	29	50	13	7	15·23 days

The average age of the inoculated was 32·83 years, of the controls 28·08 years.

John W. D. Megaw.

RUIZ CASTAÑEDA, M. Preparación de vacuna antitifo bivalente. [**Preparation of Bivalent Antityphus Vaccine.**] *Rev. Inst. Salubridad y Enfermedades Trop.* Mexico. 1944, Mar., v. 5, No. 1, 1–9. English summary (3 lines).

In this paper full details are given of the technique now employed by the author in the preparation of a bivalent antityphus vaccine, which he regards as preferable to the monovalent vaccine because he believes that epidemics of louse-borne typhus may originate from murine as well as from classical strains of rickettsiae.

The lungs of mice and rats inoculated by the intratracheal route are used, and there are certain differences in the methods employed in preparing the two types

of vaccine, which are afterwards mixed together in a concentrated suspension to which formalin is added as a preservative. The mixture is diluted with saline at the time of use.

Except for workers who contemplate undertaking the difficult work of preparing animal-lung vaccines the author's previous description of the bivalent vaccine will suffice [see this *Bulletin*, 1943, v. 40, 128]. *John W. D. Megaw.*

PATTERSON, H. S. **Scrub Typhus : an Unusual Case simulating Mumps.** *Med. J. Australia.* 1944, Aug. 5, v. 2, No. 6, 138.

In this case the onset was with painful swelling in the region of the right parotid gland and redness in the upper eyelid of the right eye. On the 2nd day a small scabbed lesion was noticed in the middle of the margin of the reddened eyelid.

From the 2nd to the 4th day the temperature was remittent and ranged between 99·4° and 101·4°F. The provisional diagnosis was mumps.

On the 4th day a pink macular rash appeared on the trunk, and the temperature rose to 103·4° ; there was bilateral axillary adenitis, severe frontal headache, and backache. Attention was drawn at this time to the resemblance of the lesion of the eyelid to " the eschar of typhus fever " [presumably the initial necrotic sore often seen in mite-borne typhus is referred to].

The provisional diagnosis was then changed to one of scrub typhus, and " this was confirmed by the Weil-Felix agglutination test, which was performed a week later, a serum-agglutination of 1–1,280 being obtained." [The strain of *Proteus* organism used in the test is not mentioned.]

By the 5th day the rash became confluent and extended to the limbs ; a bilateral inguinal adenitis was observed on the same day. The further course of the illness does not call for special comment ; it was such as would be expected in a case of mite-borne typhus. *John W. D. Megaw.*

WOMERSLEY, H. & HEASLIP, W. G. **The Trombiculinae (Acarina) or Itchmites of the Austro-Malayan and Oriental Regions.** *Trans. Roy. Soc. S. Australia.* 1943, v. 67, Pt. 1, 68–142, 12 pls. & 18 figs. [59 refs.] [Summary taken from *Rev. Applied Entom.* Ser. B. 1944, Sept., v. 32, Pt. 9, 161–2.]

This paper includes a brief discussion of the economic importance of the mites of the subfamily Trombiculinae, a key to the 19 genera recognised by the authors (of which two are new and a third receives a new name) and a revision of the species of the Austro-Malayan and Oriental Regions. The many new species described include *Trombicula fletcheri*, which occurs in Malaya and is thought to be the species recorded there as *T. akamushi*, Brumpt, and *T. hatorii*, which is the Formosan mite briefly described by Hatori as *T. pseudoakamushi* (non Tanaka) and described and figured by Kawamura and Yamaguchi as *T. pseudoakamushi* (non Tanaka) Hatori. In the section on economic importance, it is pointed out that though Trombiculine mites of several genera attack man and cause severe irritation, all those that are vectors of disease belong to the genus *Trombicula*, sens. str. *T. akamushi* is the recognised vector of tsutsugamushi disease in Japan and Formosa, and *T. deliensis*, Walch, probably transmits the same or an allied disease in Sumatra, Malaya, Queensland and India. The name *T. minor* var. *deliensis*, Walch,* is used for the mite that Gunther considered to be the vector of " endemic typhus " in New Guinea. Gunther described it as *T. hirsti* var. *buloloensis* [but later concluded that it was identical with *T. minor*, Berl.].

*The name *deliensis* as applied to this form is preoccupied by Walch's species *T. deliensis*. The next available name for the variety is presumably *buloloensis*, Gunther.—ED.

As regards the nomenclature of the Japanese species, the author considers that *T. pseudoakamushi*, Tanaka, should be dropped from the literature, as it is a complex of at least two species for which valid names (*T. pallida*, Nagayo et al.), and *T. palpalis*, Nagayo et al.) are available, but he has been unable to ascertain the status of *T. tanakai*, Kishida, which may be an earlier name for *T. akamushi*.

PRADHAN, K. G. **Typhus in Akola (Berar).** *Indian Med. Gaz.* 1944, Apr., v. 79, No. 4, 145.

Since 1937 the author has seen 50 cases of fever, diagnosed as typhus, at Akola, a town in Berar, in central India. About 8–10 cases were seen yearly, all in the months of August, September and October. The mortality rate was about 10 per cent.

The clinical description given by the author is in keeping with his diagnosis of a fever of the typhus group. The fever lasted about 14 days; it was of the continued or remittent type except in one case in which it was almost intermittent; it ended by lysis. The rash appeared about the 6th day, it extended over the whole body except the palms and soles, and was macular and haemorrhagic in the severe cases; in mild attacks it was papular. Toxaemia, bronchitis and albuminuria were features of all except the mildest cases. The Weil-Felix reaction was "inconclusive" in the one case in which it was tested. Most of the patients were poor persons and were louse-infested, but some were free from lice; some were cultivators, and tick typhus was regarded as a possible diagnosis. In one child a jungle tick was suggested as a probable "insect" vector. *John W. D. Megaw.*

BARDHAN, P. N. **Typhus in the United Provinces of India. Being a Contribution to the Study of Typhus Fever.** *Indian Med. Gaz.* 1944, Apr., v. 79, No. 4, 150–54.

The author saw 41 serologically-proved cases of typhus fever in the United Provinces of India, where the disease is said to occur in a mildly endemic form throughout the year. All the patients were in the Army; there were no complications and no deaths.

In 1937–1938 the author saw 11 cases in Lansdowne Cantonment, which is situated at an elevation of 6,000 feet in the same range of hills as Kumaon, "from where Megaw (1917), Blewitt (1938) and other workers have described cases of tick- and louse-borne typhus."

Ticks, lice and bed-bugs, are said to abound in the place, but not in the military living quarters. Platoons of troops often went to the neighbouring hills where they camped, up to 8 days at a time.

The clinical description points to the diagnosis of a relatively mild fever of the typhus group, but, surprisingly, no rash could be detected in any of the patients. The leucocyte count was normal or slightly raised, it was never below normal.

The remaining 30 cases were seen at Jhansi (19 cases), Nowgong, Muttra and Agra, all in the plains of the United Provinces, in 1939–1942.

These were similar in their clinical features, including the absence of rash. Thirteen of the cases occurred in the cold-weather months of December, January and February; the rest were rather uniformly distributed over the other months except that only two occurred in July and August.

All the patients "would be exposed to bites by fleas, sandflies and ticks and mites, during outdoor training; lice were well under control and generally absent."

The agglutination responses in the two groups of cases were remarkably similar ; tables show the titres observed in each case from the 4th day onwards. From these it appears that the *Proteus OX19* and *Pr. OX2* titres never exceeded 1–50, and showed only a slight tendency to rise during the febrile stage. The *OXK* titres in the two groups can be gathered from the following analysis of the tables :—

Proteus OXK Titres

Day of Disease ...	4	9	13–14	15	20	30
1st Group :						
1–50 to 1–125 ...	10	8	5	—	—	—
1–250 to 1–500 ...	0	3	6	—	—	—
2nd Group :						
1–25 to 1–125 ...	28	17	—	8	10	18
1–250 to 1–500 ...	2	13*	—	22*	20	5

* Including one titre of 1–1,000.

The *OXK* titre was 1–125 or 1–250 as early as the 4th day in 15 of the 41 patients ; these and the other unusual agglutination responses suggest that it would be interesting to check the *Proteus* strains used in carrying out the tests.

John W. D. Megaw.

HEILIG, R. & NAIDU, V. R. **Complement-Fixation Tests performed by** N. H. TOPPING, **U.S. Public Health Service, and other Observations in 'Mysore Typhus.'** *Indian Med. Gaz.* 1944, Apr., v. 79, No. 4, 154–7. [13 refs.]

INDIAN MED. GAZ. 1944, Apr., v. 79, No. 4, 173. **Typhus Fevers in India.**

Additional information is given about the fever of the typhus group already described on several occasions by the authors as occurring in Mysore City and State. Among 32 patients only two were members of the same family. A leucocyte count of 12,000 to 20,000 was a constant feature.

The Weil-Felix responses of the additional 18 patients dealt with in the present paper are shown in a table, from which it appears that *Proteus OX19* was agglutinated in titres of 1–80 or over in 6 cases, and that in one exceptional case the titre rose to 1–1,280 on the 11th day and to 1–20,000 on the 13th day. In this case death occurred on the 16th day. Apart from this case the titre exceeded 1–80 in only two patients ; in one of these it was 1–320 from about the 5th to the 11th day ; it fell to 1–160 on the 13th day and remained constantly at that height till the 19th day.

The *OX2* titre was 1–80 or over in 16 patients ; the highest titre recorded was 1–320.

The *OXK* titre was 1–80 or over in six patients ; the highest recorded was 1–320, on the 9th day ; in this case it fell to 1–40 on the 13th day.

The agglutination titres are said to "vary quickly and sometimes the agglutinins are present only for a short time."

The Neill-Mooser reaction [presumably in guineapigs] was positive in four cases and negative in 12. From a guineapig inoculated with the blood of one of the patients, S. R. SAVOOR has isolated and maintained a strain of rickettsia through repeated guineapig passages for 8 months ; this was an orchitic strain. Another orchitic strain died out after several passages.

The interesting results of complement-fixation tests carried out by N. H. TOPPING are again mentioned ; these, in Topping's own words," would seem

to indicate that the disease which you consider to be endemic typhus in Mysore is caused by a virus which produces antibody that fixes complement to a higher titre with a rickettsial antigen from Rocky Mountain spotted fever than it does with a rickettsial antigen prepared from either endemic or epidemic typhus."

The disease is regarded by the authors as being probably tick-borne, and as being serologically and clinically identical with Boyd's X2 typhus [this *Bulletin*, 1936, v. 33, 417], " which certainly is not a louse- mite- or rat flea-typhus."

None of the patients had obvious contact with jungle ticks so that dog ticks were regarded as the probable local vectors. *John W. D. Megaw.*

BEIGLBÖCK, W. & LÖSCHER, H. Zur Behandlung des Wolhynischen Fiebers. [**The Treatment of Trench Fever.**] *Deut. med. Woch.* 1944, Mar. 3, v. 70, No. 9/10, 120–23, 2 charts.

The authors begin by stating that none of the methods of treating trench fever hitherto tried has been found successful. It occurred to them that the recurring attacks of fever which are characteristic of the disease might represent a defensive reaction on the part of the body as well as a symptom, and so they decided to try pyretotherapy. They found that an intravenous injection of 0·5–1·0 cc. of " pyrifer " [a colon bacillus vaccine] caused a sharp rise of temperature to a higher level than that occurring in the natural paroxysm. They decided that the best time to start treatment was after the end of a spell of fever, but in some chronic cases with slight rises of temperature they gave the injections during the febrile periods.

After experience gained in the treatment of 25 patients they formed the opinion that one or two—in rare cases three—injections at intervals of 3–4 days were enough to cut short the course of the disease. In some cases pyrifer of " number 1 strength " did not cause a sufficiently sharp reaction and in these cases the next injection consisted of " number 2 strength " of the preparation. They admit that it is very difficult to estimate the effect of any treatment in a disease so variable as trench fever, and also that the only available control was their experience of previous cases treated either without drugs or by sulphapyridine or atebrin. Still they claim to have established the value of the treatment beyond any reasonable doubt.

Clinical details, illustrated by temperature charts, are given of two cases. A further claim is made that there is great relief of pain and a rapid return to normal of the blood-sedimentation rate. *John W. D. Megaw.*

EBERLIN, E. Ueber die Behandlung des Wolhynischen Fiebers (Fünftagefiebers) mit Antimonpräparaten. [**The Treatment of Trench Fever with Antimony Preparations.**] *Deut. med. Woch.* 1944, May 26, v. 70, No. 21/22, 306, 2 figs.

In a series of cases of trench fever the author found that the fever and the shin pains were quickly cured by solustibosan (Bayer) [hexonate or gluconate of antimony in pentavalent form]. A daily injection [dose not stated] for three successive days was given; it can be given intramuscularly as well as intravenously and produces no unpleasant side-effects. *J. F. Corson.*

YELLOW FEVER.

CHANDLER, A. C. **Phenothiazine as a Mosquito Larvicide with special reference to Container-breeding Mosquitoes.** *Proc. & Papers 13th Ann. Conference Mosquito Control Ass., 1944, Feb. 28 & 29, Berkeley, Ca.* 86–90.

The author claims that phenothiazine is the ideal larvicide for controlling the breeding of *Aëdes aegypti* in fire buckets, drinking troughs, vases in cemeteries and such like. The powdered chemical, dusted on the surface at the rate of 2 gm. per 25 gallons of water, will prevent breeding for three months to one year after a single application. For issue to the public for use in flower vases, etc., it may be incorporated with glue and applied to paper (4 gm. phenothiazine to 100 sq. in. of paper) and cut into pieces $\frac{1}{4} \times 1$ in.; or, for use by sanitary inspectors, it may be suspended in dilute alcohol and applied from a dropper bottle in amounts to give a concentration of something like 1 in 60,000 parts of water. Phenothiazine is highly toxic to fish. *V. B. Wigglesworth.*

DENGUE.

DAGGY, R. H. *Aëdes scutellaris hebrideus* **Edwards: A Probable Vector of Dengue in the New Hebrides.** *War Medicine.* Chicago. 1944, May, v. 5, No. 5, 292–3.

During an epidemic of dengue among troops stationed on the island of Espirito Santo in the New Hebrides, *Aëdes scutellaris hebrideus* was found breeding in large numbers in the usual artificial containers as well as in coconut shells, cacao pods, etc., at a time when *Aëdes aegypti* was very scarce. This is regarded as good epidemiological evidence that *Aëdes scutellaris hebrideus* is a carrier of dengue. This species is closely related to *A. albopictus* which is a proved carrier in the Philippines. It breeds in small collections of water in and around houses like *A. aegypti*; but in addition it breeds in the forest, in rain-filled holes, in raised coral reefs and in open wells.

V. B. Wigglesworth.

PLAGUE.

PUBLIC HEALTH REP. Wash. 1944, July 14, v. 59, No. 28, 911–15. **Plague Infection reported in the United States during 1943.**

In the United States only two cases of plague occurred during 1943, one of which was fatal. This fatal case, in a child of two years of age, is especially interesting because death occurred two months after onset, and the diagnosis at autopsy was "bubonic plague and chronic plague encephalitis." Field surveys continued as in previous years and several new localities were reported infected. The rodents found to be plague-infected were: rats, ground squirrels, chipmunks, wood rats, meadow mice, harvest mice, white-footed mice, grasshopper mice and prairie dogs; their ectoparasites were fleas, lice and ticks. Surveys are necessarily only of sampling type, but the "wide biological and geographic distribution of plague infection in western United States . . . will serve to give a warning if the areas of sylvatic infection approach localities of sufficient biological densities of susceptible rodent species and human populations to constitute a dangerous situation." *W. F. Harvey.*

PUBLIC HEALTH REP. Wash. 1944, July 21, v. 59, No. 29, 962. **Human Case of Pneumonic Plague (Laboratory Infection) in San Francisco, Calif.**

" A case of primary pneumonic plague, in which the infection was acquired in the laboratory, has been reported in San Francisco, Calif. The case occurred in a Public Health Service Officer, who was engaged at the time in plague work at the plague laboratory in San Francisco. The patient became ill on May 30 and was admitted to the United States Marine Hospital on June 1. He is reported to have recovered.' Precautionary measures were promptly adopted, and no secondary cases have occurred."

BLANC, G. & BALTAZARD, M. Sur le mécanisme de la transmission de la peste par *Xenopsylla cheopis*. [**The Mechanism of Transmission of Plague by** *Xenopsylla cheopis*.] *C. R. Soc. Biol.* 1942, Oct., v. 136, No. 19–20, 646–7.

It is generally accepted that obstruction of the proventriculus of *Xenopsylla cheopis* by plague bacilli, with subsequent vomiting while biting, is an important means of transmission of plague. The authors have made experiments which lead them to discredit the importance of this " blocking " of the fleas.

A guineapig, with a heavy blood infection with plague bacilli, was placed in a box along with fleas, *Xenopsylla cheopis*, which had been kept for 15 days after being bred out and had not yet fed. This is known to produce infection in 100 per cent. of the fleas, but to make sure, other similarly infected guineapigs were put into the box for a few days. Then healthy guineapigs were placed successively in the box and left there until they died ; 15 guineapigs thus died of plague in the box, which was cleaned frequently to avoid the inclusion of new fleas. The experiment lasted for three months and during the last 15 days only a few fleas remained alive ; but three months is the duration of life of the fleas in all breeding and experimental boxes, so there was no abnormal mortality in the box, though it is generally believed that " blocked " fleas die rapidly of starvation. Since all the fleas were infected from the start of the experiment, transmission was obtained throughout three months ; if this was only effected by " blocked " fleas, either the " blocking " persisted for three months, or, still more unlikely, the fleas became " blocked " successively.

The authors think that the chief factor is the multiplication of the bacilli in fresh blood taken up in frequent feeds. Experiments have shown that infected *Xenopsylla cheopis*, after a fast of 15 days, are unable to infect by their first bite but become infective less than 12 hours afterwards. It seems that the intake of fresh blood permits the multiplication of the bacilli in the digestive tube and favours their passage into the proventriculus and proboscis. This view is supported by the positive results of experiments with lice, fleas, bugs and ticks in which blocking does not occur.

The inability of *Xenopsylla cheopis* to infect at the first feed after a fast is of epidemiological importance since the fleas only attack man when urged by hunger and leave him at the first opportunity afterwards. *J. F. Corson.*

SAVINO, E. & KUSNETZ GOOBAR, J. La peste rural en el departamento de Rio Seco (Córdoba). Su estudio epidemiológico, con especial referencia al " Graomys griseoflavus centralis " como depósito de virus pestoso, así como también el hallazgo de peste espontánea en algunos roedores agrestes y en gatos domésticos. [**Rural Plague in Rio Seco ;** *Graomys griseoflavus* **as Reservoir and the Discovery of Plague in Field Rodents and Cats.**] *Bol. Sanitario.* Buenos Aires. 1943, July–Sept., v. 7, Nos. 7, 8 & 9, 193–200. [14 refs.]

The results of the authors' survey were : (1) *Graomys griseoflavus centralis*. Twenty-eight were examined, and from 24 of these 60 fleas, mostly

Rhopalopsyllus, were collected. Two *Graomys*, one dead and one moribund, yielded positive plague cultures: these rodents, it was confirmed, have contacts with human habitations. (2) *Other rodents* identified were *Galea musteloides leucoblephara*, *Hesperomys murillus cordovensis* and *Mus musculus*. (3) *Cats*. Five cats had died spontaneously and three of these were proven plague-infected; the other two were negative. *W. F. Harvey.*

Pozzo, A. A. Peste selvatica—peste silvestre. [**Sylvatic Plague.**] *Bol. Sanitario.* Buenos Aires. 1943, July–Sept., v. 7, Nos. 7, 8 & 9, 255–64.

CHOLERA.

i. Bernard, P. N. & Gallut, J. Sur un mode de préparation de la toxine cholérique. [**A Method of Preparation of Cholera Toxin.**] *C. R. Soc. Biol.* 1943, Jan., v. 137, No. 1–2, 10.

ii. —— & ——. Conditions favorables à la production de la toxine cholérique, [**Conditions Favourable for the Production of Cholera Toxin.**] *C. R. Soc. Biol.* 1943, Jan., v. 137, No. 1–2, 11–12.

i. The culture medium is the peptonized broth, containing glucose and sodium acetate, used by Ramon [*Bulletin of Hygiene*, 1933, v. 8, 295] for obtaining diphtheria toxin. Cholera vibrios, grown on agar for 18 hours at 37°C. are added in the proportion corresponding to 8–10 mgm. of dried organisms to 1 cc. of broth; portions removed for testing, after the addition of toluene, are centrifuged to get rid of the vibrios. The toxin appears in the supernatant liquid after three hours, reaches a maximum after four hours, and rapidly diminishes after five hours. At four hours the fatal dose for a guineapig of 250 gm. is 0·25 cc. and for a mouse of 15 gm. it is 0·05 cc.

A more powerful toxin can be obtained by repeatedly adding more vibrios to the same broth (250–500 cc.), centrifuging it four hours after each addition, and replacing the glucose to its original strength of 5 gm. per litre and readjusting it to *p*H 8. After the tenth addition of vibrios a toxin was obtained with a fatal dose for a guineapig of 0·05 cc.; it may happen, however, that the toxicity decreases after the fifth addition, or it may even disappear entirely.

ii. In the preparation of cholera toxin described above, 99·5–100 per cent. of the vibrios are dead after four hours' incubation, and the *p*H of the medium has changed from 8 to 5·8; in the same broth, without glucose, few vibrios die. The change in the *p*H is produced by fermentation of the sugar by the vibrios; with the equivalent of 2 mgm. of dry vibrios per cc. of broth the *p*H reaches 5·8 in five hours and 3·8 gm. of the original 5 gm. per litre of glucose has been used up. Estimations made with different quantities show that the most favourable proportions are 5 gm. of glucose per litre and the equivalent of 8–10 mgm. of dry vibrios per cc. In the authors' experiments the massive death of the vibrios appears to be the dominant factor in the rapid diffusion of the cholera toxin. *J. F. Corson.*

BACILLARY DYSENTERY.

Stewart, W. **On the Viability and Transmission of Dysentery Bacilli by Flies in North Africa.** *J. Roy. Army Med. Corps.* 1944, July, v. 83, No. 1, 42–6.

Human carriers of dysentery bacilli—Flexner, Sonne and Schmitz—are common among the native population in Algeria. Of 149 Arabs examined for

employment in kitchens, 23 gave positive stool cultures ; they were apparently well and their stools were normal in appearance. Hygienic standards are low, and the natives urinate and defaecate in open spaces and open latrines. Myriads of flies breed and feed on such excreta during the hot season. Experiments were therefore planned to find what part the fly may play in the spread of dysentery. Positive specimens of faeces spread on uncovered Petri dishes were placed along with trapped flies in a "compo" ration box covered with mosquito-proof netting ; the contents were exposed to the air but not to direct sunlight. The faecal specimens dried up in 1 to 2 days. Drinking-water was supplied—otherwise the flies died in 2 to 3 days, but as Flexner bacilli were found to survive in plain water for 38 days, the water-supply was changed regularly so as to prevent its becoming a source of infection. Plates of MacConkey's medium were placed in the box, removed at regular intervals after being naturally inoculated by the flies, and, after incubation, were examined for colonies of the dysentery organisms. Under these conditions, flies could apparently carry dysentery bacilli (Flexner and Schmitz) for periods up to 11–12 days. As dysentery organisms could not usually be recovered after 1–2 days from faeces allowed to dry naturally, it is apparently presumed that flies would not be contaminated from the specimen after this time. However, in the author's own experience, dysentery bacilli may remain viable in faeces for 5, 8, 10 and 12 days (four different specimens). Although flies were shown to be carriers, the incidence of dysentery in this particular area dropped sharply in August and September when flies were still prevalent. *Robert Cruickshank.*

POTH, E. J. & ROSS, C. A. **The Clinical Use of Phthalylsulfathiazole.** *J. Lab. & Clin. Med.* 1944, Aug., v. 29, No. 8, 785–808, 13 charts. [21 refs.]

Phthalylsulphathiazole is a compound, the properties of which have been described in previous abstracts [this *Bulletin*, 1944, v. 41, 757]. It closely resembles succinylsulphathiazole, but is two to four times more active. When given to dogs by mouth, it reduces the coliform bacilli in the faeces to very small numbers and suppresses the anaerobic vegetative organisms (but not the spores) ; it is ineffective against *Strep. faecalis*. It renders the faeces less liquid than does succinylsulphathiazole. It may be given to man in doses of 0·0625 to 0·25 gm. per kgm. per day, divided into three to six doses or as a single dose. The lower the total daily dose and the less it is subdivided, the slower the action in reducing the faecal content of coliform bacilli. When 0·25 gm. per kgm. was given daily, divided into six doses, these bacteria were greatly reduced in number (to 10 bacilli per gm. wet stool), even in the presence of watery diarrhoea produced by magnesium sulphate ; in this respect, phthalylsulphathiazole is more effective than succinylsulphathiazole. Apparently, relatively more of the phthalyl than of the succinyl compound is converted into free sulphathiazole in the bowel. The amount of phthalylsulphathiazole which is absorbed into the body (as judged by the amount excreted in the urine) is not increased by increasing the dose ; consequently, increasing the dose does not increase the toxicity. There is some evidence that the bacteriostatic action of the bowel is not due entirely to the sulphathiazole liberated, but that part of it may be due to the unchanged drug.

Other sulphonamides—sulphanilamide, sulphapyridine and sulphathiazole—have little or no action in reducing the numbers of coliform bacilli in the human faeces when given by mouth ; but admittedly they are often effective in the treatment of bacillary dysentery.

Phthalylsulphathiazole has proved to be highly specific in the treatment of (Flexner) bacillary dysentery [POTH, this *Bulletin*, 1944, v. 41, 570]. It is often effective also in non-specific diarrhoeas. The best dosage is 0·04 gm.

per kgm. every four hours for 12 doses, and then 0·02 gm. per kgm. at four-hour intervals until diarrhoea ceases, or for a total of seven days. "Positive" stools are found only rarely on follow-up cultures; if they are found, the patients should be given 0·02 gm. per kgm. every four hours for 10 more days, after which further cultures should be made.

Six cases of chronic ulcerative colitis have been treated, with a satisfactory clinical response in every instance. During the initial period of four weeks, 0·02 gm. per kgm. was given every four hours. One patient has been treated continuously for 10 months, without any toxic reactions.

Phthalylsulphathiazole is also recommended for preparatory treatment of patients before operation on the large intestine, being better in this respect than succinylsulphathiazole if diarrhoea is present. The dose is 0·02 gm. per kgm. four-hourly. Toxic reactions have been rare, a single case of drug fever being the main instance. Crystalluria does not occur. *F. Hawking.*

AMOEBIASIS AND INTESTINAL PROTOZOAL INFECTIONS.

BELTRÁN, E. & RAÚL LARENAS, M. Investigación de protozoarios en materias fecales de niños con "diarrea". [**Protozoa in the Faeces of Children with Diarrhoea.**] *Rev. Inst. Salubridad y Enfermedades Trop.* Mexico. 1944, Mar., v. 5, No. 1, 23–30. English summary.

"Fecal samples of 1,500 children with diarrheic stools were examined for protozoa. Ages of same were from 0 months to 6 years. In those groups of less age (0 to 6 months, 7 to 12 months and 13 months to less than 2 years) the general parasitation was low: 4 per cent., 13 per cent. and 33 per cent., respectively; so was also the incidence of *E. histolytica*: 0·3 per cent., 0·5 per cent. and 2 per cent. In those groups of higher age (2 to less than 3 years and 3 to 6 years) the parasitation was notably higher (62 per cent. and 59 per cent.) as well as the incidence of *E. histolytica*: 16 per cent. and 17 per cent., respectively. The results obtained seem to show the slight importance of protozoa in etiology of infant's diarrheas, at least under 2 years age." [The work was done in Mexico City.]

REES, C. W., BOZICEVICH, J., REARDON, Lucy V. & DAFT, F. S. **The Influence of Cholesterol and certain Vitamins on the Growth of** *Endamoeba histolytica* **with a Single Species of Bacteria.** *Amer. J. Trop. Med.* 1944, May, v. 24, No. 3, 189–93. [10 refs.]

Working with cultures of *E. histolytica* accompanied by a single bacterial species the authors have found that if the whole egg in the L.E.S. medium [this *Bulletin*, 1925, v. 22, 727], which was the one employed, is replaced by egg white or egg yolk, only poor growth is obtained. To media prepared with egg white or yolk various materials were added with a view to discovering some of the essential requirements of the amoebae. The addition, to the egg white medium, of cholesterol and vitamins of the B complex, stimulated growth of amoebae to well over 1,000,000 per flask. This compared very favourably with the growth in the whole egg L.E.S. medium. Cholesterol alone, or vitamins alone, had no favourable action. These substances did not improve the egg yolk medium, though a combination of ovalbumin, ovomucin and ovomucoid did so. Egg albumin medium was improved by the addition of amino acids of casein hydrolysate, or four purin bases. A number of other substances gave indeterminate results. It seems evident that the whole egg

base in the L.E.S. medium supplies substances essential for the growth of amoebae, which in flasks of this medium reach 1,530,000 per flask. The general results are set out in a table, while many technical details are given in the body of the paper. *C. M. Wenyon.*

MARTIN, R. & BEBEY, M. Sur l'enkystement de l'amibe dysentérique. [**Encystment of the Dysentery Amoeba.**] *Arch. Inst. Pasteur d'Algérie.* 1944, Mar., v. 22, No. 1, 11–12.

In the faeces of a dysenteric patient the authors observed numerous amoebic cysts about 18 microns in diameter. The specimen was very rich in bacteria, many of which occurred within the cysts in an arc extending along one-sixth of the circumference of the cyst. The bacteria were pushing their way through the cyst wall at this arc, resting a moment on the wall and then escaping. It is stated that the cysts contained no red blood corpuscles. A similar observation was made on a second case. The authors consider they were observing the process of encystment of *E. histolytica.* As no red blood corpuscles were present these had already been discharged, but the bacteria were seen to be escaping through the only remaining permeable part of the cyst wall.

C. M. Wenyon.

GIORDANO, A. F. Urticaria y amebiasis. [**Urticaria and Amoebiasis.**] *Rev. Argentina Dermatosifilologia.* 1944, June, v. 28, No. 2, 157–61.

The author considers that in cases of allergic skin conditions, such as urticaria and angioneurotic oedema, intestinal infections are not infrequently the cause. In a series of 27 cases examined by him four were found to harbour *E. histolytica* and one *E. coli,* and it is claimed that a cure was obtained by treatment with emetine injections. [Quite apart from the fact that it is generally held that emetine does not eradicate *E. coli* infections, the conclusion that the amoebae in the intestine were responsible for the skin condition seems hardly justified by the data presented.] *C. M. Wenyon.*

WALTERS, W., WATKINS, C. H., BUTT, H. R. & MARSHALL, J. M. **Amebic Abscess of the Liver Unsuspected until Perforation.** *J. Amer. Med. Ass.* 1944, Aug. 5, v. 125, No. 14, 963–6, 5 figs.

Sudden perforation of amoebic abscess occurred in two naval men who had returned to America from the South Pacific area with filariasis. Both patients had been examined and studied in hospital by the Filarial Commission and had shown no signs or symptoms of amoebic abscess ; there was no diarrhoea and no amoebae were found in the faeces. In one patient perforation occurred six months after admission to hospital, in the other patient, after one month. The symptoms after perforation were similar in both : a sudden development of aching pain in the right shoulder, in the right costo-vertebral region and in the lower part of the right thorax, with chills and fever ; pain and muscular spasm were also present in the right upper abdominal quadrant. Radiographs showed progressive elevation of the right side of the diaphragm and loss of the acute cardio-phrenic angle on the left side. There was marked leucocytosis ; 28,000 cells per cmm. in one case and 19,500 in the other. Both patients had treatment with emetine hydrochloride and an open operation with drainage. Two large communicating abscesses—one in the right lobe of the liver and the other beneath the diaphragm—were present in each patient ; the pus was creamy-white in colour and contained, in one case, *Entamoeba histolytica,* and

in the other, Gram-positive cocci. Both patients made an excellent recovery. The authors refer to papers by BERNE [this *Bulletin*, 1943, v. 40, 146] and by OCHSNER and DEBAKEY [*ibid.*, 915]. *J. F. Corson.*

ROSS, J. A. **Amoebic Perinephric Abscess.** *Brit. J. Radiology.* 1944, Sept., v. 17, No. 201, 289–90, 3 figs.

A case of perinephric abscess occurring in a native serving with the Pioneer Corps in the M.E.F. is recorded. Retrograde pyelography demonstrated the extravasation of the dye from the renal pelvis into the perinephric abscess. An amoebic aetiology was suggested in view of a past history of amoebic dysentery. Anti-amoebic therapy caused a disappearance of the abscess without recourse to surgery, thus confirming the amoebic nature of the abscess. [Radiologically an amoebic perinephric abscess is indistinguishable from a perinephric abscess caused by any other organism.] *E. Samuel.*

DE RIVAS, D. **Amebiasis of the Uterus.** *Amer. J. Trop. Med.* 1944, May, v. 24, No. 3, 185–7, 4 figs.

A patient, 70 years of age, in a mental hospital, was noted to have a vagina discharge associated with enlargement of the uterus which suggested malignant disease. After death as a result of senile changes, arterio-sclerosis and hypostatic pneumonia, it was found that the uterus was moderately enlarged and that the swollen cervix was soft, eroded and ulcerated. Microscopic examination excluded malignant disease but revealed an ulcerative process and the presence of *E. histolytica* in the granulation tissue. The author believes this to be the first case of amoebiasis of the uterus to be placed on record. *C. M. Wenyon.*

PLACEO, F. Amebiasi cutanea (caso clinico). [**Cutaneous Amoebiasis.**] *Boll. Soc. Ital. di Med. e Igiene Trop.* (Sez. Eritrea). 1944, v. 3, No. 1, 89–94, 1 pl. English summary (4 lines).

"The author describes a case of cutaneous amoebiasis in the skin of the perianal region.

"He points out the rarity of the lesion and difficulty of diagnosis unless a microscopic examination is carried out."

ALEXANDER, J. S., PARK-ROSS, M. & STEIN, M. **Shadocol (T.I.P.) in the Treatment of Amoebiasis. Preliminary Report.** *South African Med. J.* 1944, Aug. 12, v. 18, No. 15, 253–4.

This study was prompted by a recent paper in the *British Medical Journal* of the successful use of Shadocol in chronic Salmonella infections of the bowel.

So far the authors' routine method of treating amoebiasis has been by giving emetine injections, carbarsone by mouth and colonic retention enemata of chiniofon [quinoxyl, Burroughs, Wellcome & Co.; Yatren, Bayer]. This procedure can be criticized on the following grounds:—(*a*) expense, (*b*) length of time in hospital, (*c*) after-effects of treatment to which children are extremely sensitive.

Method T.I.P., *i.e.* sodium tetraiodophenolphthalein (Shadocol or Opacol), was administered to 30 children and 3 adults suffering from amoebiasis. The acidic form is prepared for oral administration and represents a suspension of the white acid body which reverts to the blue soluble salt in the intestinal canal. The dye is absorbed from the intestine, secreted by the liver and excreted with the bile. No special dietetic measures or other medication were

employed. To children under six years of age half a bottle of the dye was administered, and a full bottle to those over six years of age, usually at night after a light meal. The next morning a dose of saline cathartic was given. Examinations of at least six fresh faecal specimens were made in every case, beginning on the day after the saline purgative ; but it is fully recognized that further stool examinations over a longer period are desirable.

A table of 33 cases of amoebiasis shows that many of the patients had multiple infections with *Giardia*, *Ascaris*, *Trichuris trichiura* and *Taenia saginata*, but these parasites were unaffected by the dye. Generally speaking, symptoms attributable to amoebiasis abated and in 74 per cent. both free forms of *E. histolytica* and its cysts disappeared. The authors very properly insist that the immediate purpose of this report is to *stimulate interest*, and it is hoped that further trials will be made. The findings certainly merit further study to determine the exact therapeutic value of T.I.P. in amoebiasis, either as an immediate out-patient treatment or as an ancillary treatment in hospitalized cases. *Philip Manson-Bahr.*

BERTHO, A. Pharmakologische Prüfung der Extrakte und Alkaloide aus Holarrhena antidysenterica. [**Pharmacological Tests of the Extracts and Alkaloids of** *Holarrhena antidysenterica.*] *Arch. f. Exper. Path. u. Pharm.* 1944, Mar. 15, v. 203, No. 1, 41–6. [Refs. in footnotes.]

The author has continued his earlier work, to which reference is made in the paper under review, on the alkaloids of *Holarrhena antidysenterica* (kurchi). He has carried out a series of toxicity tests on ciliates (colpidium and paramecium) and daphnia. The already known fact that the mixture of total alkaloids was more active than conessine suggested that one of the other alkaloids would be found to be more active. Accordingly, conessine-HCl, conkurchine-HCl, kurchicine-HCl, the mixture of crude alkaloids and two petrol-ether extracts (fractions A and B) were compared with emetine-HCl and quinine-HCl. If the activity of emetine-HCl is taken as the unit, that of quinine-HCl and conessine-HCl is 4 and that of conkurchine-HCl is 8. This activity of conkurchine-HCl is greater than that of the total alkaloids or the extracts, but it is evident that this activity will vary with the quantities of the highly active conkurchine present.

It is well known that the chemistry of the kurchi alkaloids is in a very confused state, and until alkaloids of undoubted purity have been isolated, biological results are likely to be contradictory. A full account of these alkaloids will be found in HENRY's " Plant Alkaloids." *C. M. Wenyon.*

WU, C. C. **Ya Tan Tzu Treatment of Amebic Dysentery.** *Chinese Med. J.* 1943, Oct.–Dec., v. 61, No. 4, 337–41.

Ya Tan Tzu, the Chinese name for the seeds of *Brucea javanica*, was suggested by H. L. LIU as a " new specific " for amoebic dysentery in 1937. [Another name for these seeds is kô-sam. They had been used for treating dysentery in China since 1765 and Burroughs Wellcome & Co. had a preparation of it on the market, Tabloid Kô-sam, in 1905 ; the drug was, therefore, not a " new specific " (see this *Bulletin*, 1937, v. 34, 955)].

The author has been testing this drug again. The first six patients he treated according to Liu's dosage of 20–50 seeds, but with disappointing results, one only giving a satisfactory response. He therefore increased the dose and

changed somewhat the method. His routine was a six-day course. On the first, third and fifth days 20 seeds in capsule were taken three times a day by mouth ; on the second, fourth and sixth days 20 seeds were allowed to soak for two hours in 200 cc. of 1 per cent. $NaHCO_3$ and given as an enema to be retained after a wash-out. The effects were noted from the clinical aspect and repeated sigmoidoscopy gave information as to the healing of the lesions.

The author has thus treated 25 patients during the last 3½ years, their ages ranging between 11 and 67 years ; 21 were males, 4 females. Ten were acute cases, less than one month's duration, 15 were chronic, from several months' to seven years' duration. Mobile *E. histolytica* was found in every patient. In 19 of the 25, symptoms cleared in two to five days and the *Entamoeba* could no longer be found in the stools. The local lesions healed in 5–10 days in six patients and within another week in seven more. Three others were recorded as "improved," symptoms abated and the entamoeba disappeared ; but in one patient in poor condition the symptoms recurred three weeks later ; another, a syphilitic, feeling better, refused further treatment ; the third suffered from bacillary dysentery also, so the local lesions did not clear up till this, too, had been treated. Three are returned as "failures," but in one of these the bowel symptoms cleared up though the fever continued, and a liver abscess was found and emetine given. Those of the first group were followed up : Five had remained well, but had left hospital only 2–4 months, another had been out 18 months, two others for more than two years and eleven for more than three years and had remained well. Two relapsed, three and six weeks respectively after discharge ; one of these was again successfully checked by Ya Tan Tzu.

Toxic effects were negligible ; eight patients complained of nausea and four vomited ; a few had abdominal discomfort or actual pain (but this may have been due to the dysentery and not to the drug). Ya Tan Tzu should certainly be given further trial and if reports continue to be satisfactory it should prove a valuable addition to the medical armamentarium for amoebic dysentery.

H. Harold Scott.

KESSEL, J. F., ALLISON, D. K., KAIME, Martha, QUIROS, Maria & GLOECKNER, A. **The Cysticidal Effects of Chlorine and Ozone on Cysts of** *Endamoeba histolytica*, **together with a Comparative Study of Several Encystment Media.** *Amer. J. Trop. Med.* 1944, May, v. 24, No. 3, 177–83, 2 graphs. [12 refs.]

In the tests carried out in the work described in this paper cysts of *E. histolytica* were added to a litre of water, to a concentration of 100 cysts per cc. At the same time the bacterial concentration was 500,000 to 1,000,000 per cc. To the litre suspension, which had been previously buffered to give and maintain the required *p*H, was added chlorine in the form of gas or calcium hypochlorite (H.T.H.) to give a residual chlorine concentration of 0·5 or 1·0 p.p.m., or ozone to give a residual ozone concentration of 0·1 to 0·3 p.p.m. All the experiments were carried out at a temperature of 27°C. while the organic nitrogen varied from 0·5 to 2·0 p.p.m. The time of exposure of cysts to the chlorine or ozone varied from 2 to 240 minutes, while the *p*H constant for each observation varied from 5 to 9. The cysts were obtained by first growing the amoebae in buffered liver infusion agar covered with buffered serum-Ringer solution. The amoebae were then introduced into the same medium, to which starch had been added. Maximum encystment occurred within 60 hours. The sediment which contained the cysts was washed and centrifuged three times in distilled water, the cyst suspension being finally stored in the ice chest. For each observation 100,000 cysts were added to a litre of buffered water.

The cysticidal times may be summarized as follows :—

Cysticidal time in minutes at various pH values and various residuals.

	*p*H 5	*p*H 6–8	*p*H 9
H.T.H. 0·5 ppm.	30 mins.	120 mins.	120 mins.
Cl 0·5 ppm.	30 ,,	60 ,,	120 ,,
Cl 1·0 ppm.	15 ,,	30 ,,	30 ,,
Ozone 0·3 ppm.	2 ,,	4 ,,	4 ,,

From the results obtained in tests carried out under the foregoing conditions, the authors have reached the following conclusions :—

"1. Gaseous chlorine producing a residual of 0·5 p.p.m. when compared with H.T.H. producing the same residual was in general more active.

"2. The activity of chlorine tended to decrease at the higher *p*H levels studied, while the activity of ozone was less at *p*H 6 than at *p*H 5, but was not reduced between *p*H 6 and *p*H 9.

"3. No great differences were noted between the bactericidal and cysticidal effects of the loads tested. It must be noted that the bacterial load tested was unusually heavy, and if a bacterial load of 100 to 1,000 per cc. were tested the bactericidal times would have been lower.

"4. The bactericidal and cysticidal times required by ozone producing a residual of 0·3 p.p.m. were several times less than those required by chlorine producing residuals of either 0·5 p.p.m. or 1·0 p.p.m.

"5. A buffered liver infusion agar base with a buffered serum mixture is described as an encystment medium for *E. histolytica*. The results of cyst production on this medium are compared with cyst production on Boeck-Drbohlav's Ringer's-Egg Serum, Cleveland-Collier's Difco-Entamoeba Medium (2 per cent. agar), Locke's Solution and Rice Starch, and Chang's Buffered Liver-Infusion Broth. In our hands the buffered liver infusion agar was superior in cyst production to the other media tested." [See also this *Bulletin*, 1938, v. 35, 581 ; 1936, v. 33, 532.] *C. M. Wenyon.*

Hsu, K. C. **Human Intestinal Parasites in Northwest China. A Brief Survey.** *Chinese Med. J.* 1943, Oct.–Dec., v. 61, No. 4, 292–5.

RELAPSING FEVER AND OTHER SPIROCHAETOSES.

Polakow, R. ; Ordman, D. **Relapsing Fever in Graaff-Reinet [Cape Colony].** *S. African Med. J.* 1944, Aug. 26, v. 18, No. 16, 271–5.

The first part of this paper, by Polakow, comprises records of three military and six civilian cases of relapsing fever occurring in Graaff-Reinet in January and February 1944. In a footnote he mentions that *Ornithodorus moubata* had been found in the neighbourhood, and also that the Public Health Department

had announced the presence of a widespread epidemic of 400 cases of relapsing fever in Graaff-Reinet District, and several other areas in the Cape Province.

The second part of the paper, by Ordman, comprises a record of an investigation of the relapsing fever position in the non-European population of the same district. An examination of the records at the Midlands Hospital from February 1941 to March 1944, gave a total of 120 patients with typical symptoms of relapsing fever, and 63 "possibles," whose temperature charts showed suggestive readings. Blood smear examinations gave eight positive for spirochaetes in February 1944, and 18 in March; in addition there were 17 and 13 cases respectively, in these months, which were negative, but the results are not acceptable, since the blood was taken without reference to the temperature of the patients.

Houses in the Graaff-Reinet and Adendorp "locations" were found to be more or less infested with *Ornithodorus moubata*, some of which were infected with relapsing fever spirochaetes. It is estimated that about 500 cases of the disease had occurred in the non-European population of the district in the last two years, mainly in the six months ending March 1944. There is evidence that infected ticks are present on some of the farms. The disease is evidently endemic in Graaff-Reinet and district, and during the summer months may reach epidemic proportions unless measures are undertaken for the eradication of ticks. *E. Hindle.*

SCOTT, R. B. **Neurological Complications of Relapsing Fever.** *Lancet.* 1944, Sept. 30, 436–8, 3 figs. [12 refs.]

The campaign in the Libyan Desert yielded cases of relapsing fever of a type not previously known in Egypt, due to infection with a strain of *Spirochaeta recurrentis*, transmitted by the bite of a tick resembling *Ornithodorus erraticus*. [See this *Bulletin*, 1942, v. 39, 846.]

The author saw a series of 41 cases of the disease, acquired in the Western Desert, nine of which showed nervous complications. These complications arose at various times during the illness, but were more common after the third week. The nine cases are described in detail and fall into three categories: (1) those with meningitis, (2) those with signs of focal nervous damage, and (3) those with both these symptoms. The cerebrospinal fluid was examined in eight of the patients and showed a lymphocytic pleocytosis with a total cell-count sometimes as high as 2,000 per cmm. Treatment with arsphenamine was ineffective. The prognosis was difficult, some cases showing repeated relapses, though the majority recovered completely. There were no deaths. *E. Hindle.*

GASPERINI, G. C. Considerazioni sulla epidemia di "Febbre Ricorrente" nei distretti di Asghedè, Tsellim Biet e Dembè Arcai (Tigrai Orientale) nell'ottobre–novembre 1940. [**The Epidemic of Relapsing Fever in Tigrai, 1940.**] *Boll. Soc. Italiana di Med. e Igiene Trop.* (*Sez. Eritrea*). 1942, v. 1, No. 3, 32–6.

KANE, F. F. **Rat-Bite Fever due to** *Streptobacillus moniliformis.* [Correspondence.] *Lancet.* 1944, Oct. 21, 548.

A case reported from N. Ireland.

PATTERSON, H. M. **Weil's Disease. A Report of Thirty-Seven Cases.** *Hawaii Med. J.* 1944, May–June, v. 3, No. 5, 213–21.

A report of 37 cases of Weil's disease in Hawaii, all occurring among the Olaa Sugar Company employees, which has had an average population of 5,200 during the past two years.

Thirty-four of the patients were sugar cane-cutters, and the disease occurred mainly among the male Japanese cutters below 24 years of age. The clinical picture was found to be characteristic, though 57 per cent. in this series showed no jaundice. Repeated blood agglutination tests are considered to be the most reliable laboratory procedure for diagnosis.

The author recommends for treatment the use of whole blood transfusions from convalescent patients, but only two patients seem to have been treated in this manner, both with favourable results.

[See also this *Bulletin*, 1944, v. 41, 577–8.] *E. Hindle.*

LEPROSY.

MESTRE MIYARES, J. J. Clasificación Sud-americana de la lepra. [**South-American Classification of Leprosy.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 13–21.

A satisfactory classification of leprosy is important from the aspects of prognosis, of treatment and of prophylactic control. Leprosy being especially prone to attack the skin and peripheral nerves (though other tissues and organs, of course, do not escape) it has been, and is, customary to divide cases into cutaneous, neural, and mixed. The author, while not criticizing this classification, is all in favour of the following, on an anatomo-pathological basis: (1) Lepromatous; (2) Tuberculoid; (3) Non-specific. He details the characters of each of these from the aspects of (i) Pathological anatomy; (ii) Clinical features; (iii) Bacterioscopy; (iv) Immunology. The first is characterized by lepromata and infiltrations crowded with bacilli; it is highly infective and of severe type, anergic, giving a negative Mitsuda reaction. It does not as a rule, in the early stages at all events, affect the general health, and the patients can do quite heavy work, but they must be segregated, either in their houses or in colonies, under supervision and strict hygienic conditions. They do not respond well to treatment by chaulmoogra.

The second type is in many respects the converse of the first. These patients present reddish discolorations, sometimes raised or merely macular with infiltrated borders and small nodules, "micropapuloids," the lesions are follicular, limited, and contain few bacilli, corpuscular sedimentation is within normal limits, the lepromin test is usually positive, the body is putting up a good resistance; these patients are not contagious, they can carry on work with their fellows and, with certain precautions, can live at home; they respond to chaulmoogra treatment and may be cured.

The third, non-specific, type presents achromic patches or level erythematous maculae, varying in number, slightly, if at all, infiltrated, with definitely marked edges; the peripheral nerves are enlarged and indurated. In this form one sees the *main-en-griffe*, the perforating ulcer, bone absorption, etc. Whereas it is rare for the malignant lepromatous form to become the benign tuberculoid, there are three possibilities for the third type: It may remain true to itself, or may pass over to either of the other two. The nasal mucus and the skin lesions show bacilli in about half the cases, the lepromin reaction is positive in about the same proportion (some say 60 per cent.). If the hygienic surroundings are good, the diet adequate, qualitatively and quantitatively, and treatment be persisted with, the outlook of these cases is favourable. *H. Harold Scott.*

IBARRA, R. Censo de lepra. [**Leprosy Census.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 33–8, 1 fig.

DOMINGUEZ LÓPEZ, F. Censo de lepra en Camagüey. [**Census of Leprosy in Camagüey.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 39–43.

DE CASTRO PALOMINO, J. Lección de clínica sobre lepra. [**Address on Clinical Cases of Leprosy.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 22–32, 5 figs.

This is a record of a clinical address at which the author showed " about 75 coloured photographs " of cases of the lepromatous, tuberculoid and " non-specific " types of leprosy. The letterpress is very elementary and more of the nature of a lecture to students. There are good illustrations of the three types, but otherwise the article is hardly up to the standard of a Congress paper.

H. Harold Scott.

COT LESMES, V. El toxoide diftèrico en el tratamiento de la lepra. [**Diphtheria Toxoid in the Treatment of Leprosy.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 44–51.

The first part of this paper is concerned with relating the work of COLLIER, OBERDOERFFER, MCKEAN, and FAGET and JOHANSEN and their results from the use of diphtheria toxoid in leprosy. Publications by all these have been abstracted in this *Bulletin* [1941, v. 38, 26, 704 ; 1942, v. 39, 231, 232, 462, 697, 698]. The author goes on to report the results obtained by him in 63 patients. His results are of special interest because they show fundamental differences from those obtained by MCKEAN [this *Bulletin*, 1942, v. 39, 231, and see TIANT, below]. The author intended to report on 100 patients, but 37 received less than six doses or did not return for observation and the results in their cases could not be checked. The rest received 6–10 injections at least, four had 33–36 in 14–28 months, and one had 42 in 20 months. Observation has been kept up, in some cases for " a long period " and in none for less than a year. He modified COLLIER's technique, injecting 0·25 cc. as an initial dose, repeating the injection every two weeks in gradually increasing doses to a maximum of 3 cc. and then reducing to 1·0 cc. In some, in order to test the patient's susceptibility, the first dose was 0·1 cc., then increased by 0·1 cc. every three days till the larger doses were reached ; these were given, as with the others, every other week. Later, after this method had been in use for 15 months, the patients received an injection every week up to a maximum of 1·0 cc., and this was maintained unchanged, except for two patients who developed an abscess each time this dose was given and they were therefore given only 0·1 cc.

Of the 63 there were 29 of the lepromatous type. Of these 16 improved, 12 remained stationary and one was worse. Twelve were of the tuberculoid type and of these two improved, nine were stationary and one continued to get worse. Of 22 non-specific cases, 10 improved, 11 were stationary and one worse. If percentages may be permitted to point out the differences with so small totals, 55 per cent. of the lepromatous improved, 16 of the tuberculoid and 45 of the non-specific. The verdict " improved " was given if " all or most of the lesions disappeared . . . the rhinitis cleared and sensation returned, the patient gained in weight, and his general health was bettered." All the author's patients were going about and followed their usual way of life. With a chronic disease, subject to periods of remission and exacerbation, it is obviously

difficult accurately to assess the value of a special form of treatment, but the author notes particularly the greater proportion of "improved" among the lepromatous cases "among whom we saw truly spectacular results. In six of them (four were advanced L3 cases) the lesions were so changed that patients who a short time before showed large lepromata and infiltrations of face, ears and other parts of the body would no longer be regarded as lepers." [Compare this with McKean's verdict that treatment with diphtheria toxoid proved to be of no value in either major tuberculoids with numerous bacilli, or in the papular type of lepromatous cases, and even active minor tuberculoids free from bacilli failed to respond (this *Bulletin*, 1942, v. 39, 231), see also Tiant, below].

H. Harold Scott.

Tiant, F. R. Tratamiento de la lepra. [**The Treatment of Leprosy.**] *Trans. Primera Conferencia Cubana de Leprologia, Santa Clara, Cuba, Abril 1 y 2 de 1944.* 52–63.

A candid statement of the author's views and a general summary of present-day knowledge of the treatment of leprosy. "Leprosy is not incurable" he says "any more than is pulmonary tuberculosis." As nobody would pretend to cure a man, weak, in poor surroundings, and with a tuberculous cavity, so we cannot hope to restore to social life a leper with advanced bacillaemia and cachexia. In the curable stages, confidence, constancy and perseverance in treatment are necessary. He tells how one vaunted remedy after another is brought forward only to fall back into obscurity; he mentions methylene blue, mercurochrome, fluoresceine, gold, iodide of potassium, vaccines, antisera and others. "Diphtheria toxoid which gave such great hopes after the sensational reports of Collier appears already condemned to oblivion through its failure in the hands of nearly all leprologists" [but see Cot Lesmes (above)].

The author then enumerates and considers certain fundamental principles, namely: (1) Whole-hearted co-operation of the patient; (2) Raising the patient's resistance and his general state of health, by exercise, proper food, etc.; (3) Specific treatment (chaulmoogra oil) in as high a dosage as the patient can tolerate without upsetting his general health; (4) Uselessness of persisting with treatment in "burnt out" cases.

He then considers in more detail the use of chaulmoogra, the preparation, dosage, route of administration, intravenous, intramuscular, subcutaneous and intradermal (*la plancha* method), the last of which he urges. Progress of treatment must be controlled by noting the temperature, the weight, blood sedimentation, any leprous reaction.

H. Harold Scott.

HELMINTHIASIS.

Oliver-González, J. & Torregrosa, M. V. **A Substance in Animal Parasites related to the Human Isoagglutinogens.** *J. Infect. Dis.* 1944, May–June, v. 74, No. 3, 173–7. [13 refs.]

"1. Following the method outlined by Melcher and Campbell, a polysaccharide fraction has been isolated from the dried and pulverized material of the following helminths: *Ascaris suum, Ascaris lumbricoides, Trichinella spiralis, Necator americanus, Schistosoma mansoni* and the larval form of *Taenia solium.* When added to human serum, all polysaccharide fractions inhibited the α and β agglutinins in the serum. They also inhibited the hemolysis of sheep cells in a system consisting of Forssman antiserum, sheep cells and guinea pig complement.

"2. A high titer of the α agglutinins has been detected in the serum of a small number of malaria patients belonging to Groups O and B who had suffered repeated attacks of the disease.

"3. The relations that may exist between parasitic infections and the autoagglutination of erythrocytes as a result of the immunization of the host by a substance in the parasite related to the isoagglutinogens, are herein discussed."

BEGG, R. C. **Bilharzia Disease: some Prevalent Misconceptions.** *South African Med. J.* 1944, July 22, v. 18, No. 14, 239–41.

This article has much the same contents as one published by the author in 1942 [this *Bulletin*, 1943, v. 40, 550]. In the course of his work as a urologist in Johannesburg, South Africa, he has been much impressed by the number of cases of urinary schistosomiasis which could only be diagnosed by cystoscopy. About 75 per cent. of some 130 cases seen by him during the last three years "had to wait for five to twenty-five years before Bilharzia was diagnosed." He discusses the symptoms and signs of the disease and its treatment. Probably at least 80 intramuscular injections of 4 cc. of anthiomaline or fouadin are required for an adult and 150 cc. of "Fantorin" intravenously. If possible the result should be checked by cystoscopy.

The author concludes that cystoscopy is the only reliable method of diagnosing the infection. *J. F. Corson.*

SILVEIRA, J. A localização pulmonar da esquistosomose americana. [**American Pulmonary Schistosomiasis.**] *Rev. Asoc. Med. Argentina.* 1944, June 30, v. 58, No. 536, 444–7. [14 refs.]

This is a general account of pulmonary schistosomiasis due to *Schistosoma mansoni*, which is, the author thinks, commoner than is generally realized. He compares his findings with those of SHAW and GHAREEB [this *Bulletin*, 1938, v. 35, 665], who studied pulmonary schistosomiasis due to both *S. mansoni* and *S. haematobium*. While Shaw and Ghareeb found pulmonary lesions in 33 per cent. of 282 autopsies, KOPPISCH [this *Bulletin*, 1942, v. 39, 563], studying infestations with *S. mansoni* only, found eggs in the lung in only 16 out of 147 cases (10·8 per cent.). Silveira explains this difference in the incidence by reference to the fact that *S. haematobium* has easier access to the lung by way of the vesical plexus and internal iliac vein (it reaches the lung in 50 per cent. of cases), while *S. mansoni* has more difficulty in reaching the lung by way of the porto-caval anastomoses. This is confirmed by the observation that hepatic cirrhosis affects but little the migration of *S. haematobium* to the lung, while it is decisive for *S. mansoni*.

Pulmonary schistosomiasis caused by *S. mansoni* alone exists always during the migration of the larvae through the lung. This constitutes the acute or toxaemic form of the disease, which can be fatal without being clinically recognized. The chronic form is due to the arrival of the adult worms or the eggs in the lung. Clinically there are two forms of the disease, the broncho-pulmonary form with respiratory symptoms (*e.g.*, bronchitis), and the cardio-vascular form due to embarrassment of the lung circulation resulting from the arteriolitis, alveolitis, obliterating arteritis and similar changes caused by the eggs and adult worms. Miliary tubercles may be formed which may be mistaken for other conditions, *e.g.*, bacillary tuberculosis. Nodules may be formed on the pleural surface of the lung and subpleural lesions may be caused by the eggs or adult worms. The author refers to two cases in which relapsing pneumothorax was probably due to schistosomiasis. The pathological

conditions are similar to those described by Shaw and Ghareeb. The only certain diagnosis is by finding the eggs in the sputum. Failing this, diagnosis must be made on the results of examination of the faeces, the intra-cutaneous test, the eosinophilia provoked by the administration of antimonial compounds [see MAINZER, this *Bulletin*, 1937, v. 34, 394], the clinical signs, the epidemiological conditions and the results of treatment. Radiological signs are not characteristic. There may be shadows of the nodules, which may be miliary and are then easily confused with other conditions (*e.g.*, miliary tuberculosis), intensification of the general picture of lung structure and changes at the hila and in the pulmonary artery due to circulatory embarrassment. The cardio-vascular, bronchitic and other secondary symptoms must be treated as well as the general infestation, for which antimonial compounds are recommended. *G. Lapage.*

BERCOVITZ, Z. T., RODRIGUEZ-MOLINA, R., HARGRAVE, D. W., DICKIE, J. D. & GREEN, C. E. **Studies on Human Schistosoma Mansoni Infections. I. Proctoscopic Picture in Asymptomatic Schistosomiasis Mansoni Infections.** *J. Amer. Med. Ass.* 1944, Aug. 5, v. 125, No. 14, 961–3, 3 figs.

In the routine examination of army recruits in Porto Rico [West Indies], ova of *Schistosoma mansoni* were found in the faeces in about 10 per cent. A proctoscopic examination was made in 155 of these infected young men and small ulcers were found in 94. The ulcers were only a few millimetres in diameter, some were linear and others of pin-point form, and they were sharply demarcated from the surrounding normal mucosa, with no signs of inflammation. They were nearly always lying directly on the capillaries or at their bifurcation and were situated below the recto-sigmoid fold. Reference is made to the investigations of KOPPISCH [this *Bulletin*, 1942, v. 39, 563 ; 1943, v. 40, 703] in Porto Rico. The authors conclude from this examination that in areas where the presence of *S. mansoni* is suspected, careful examination of the faeces should be made regardless of the absence of any signs or symptoms of the disease. *J. F. Corson.*

DI GIACOMO, M. P. & MAYER, R. A. **Schistosomiasis mansoni.** *J. Amer. Med. Ass.* 1944, July, v. 125, No. 13, 904.

Two cases of infection with *Schistosoma mansoni* are reported ; both patients were Arabs and were treated at the U.S. Marine Hospital, Ellis Island, New York, in September and October, 1943. The first case presented no unusual features but the second patient, who had lived in the United States for the past 20 years, complained only of low back pains, weakness and some loss of weight during the last two years. He had received various forms of treatment for lumbosacral strain without effect. Ova of *S. mansoni* were found in the faeces and he was treated with " Fuadin " [Fouadin or Neoantimosan, Bayer ; stibophenum B.P. Add. III] and cured.

The authors remark on the insidiousness of this disease and recommend that anyone who has returned from an endemic area should have a stool examination for the ova whether he has symptoms or not. *J. F. Corson.*

PIÑA DAZA, M. Algo mas sobre Schistosomiasis Mansoni. [**More Facts about Schistosomiasis Mansoni.**] *Bol. Hospitales.* Caracas. 1944, Jan.–Feb., v. 43, No. 1, 28–46.] [15 refs.]

This is a doctorate thesis on orthodox Spanish lines. The author deals with haematemesis in the latest stages of atrophic cirrhosis of the liver resulting from infestation with *Schistosoma mansoni*. He divides his work into the

following sections : (1) Haematemesis and its differential diagnosis [as found in elementary text-books of medicine] ; (2) Brief remarks on Banti's syndrome and Laennec's cirrhosis of the liver ; (3) Pathogeny of haematemesis in these conditions, especially oesophageal varix. In this section the author divagates to describe the surface anatomy and topography of the normal spleen, its nerve and blood supply, and the way in which portal obstruction may cause haematemesis ; (4) Indications of the lines along which treatment may be directed [without details]. There is a table giving some of the features of 18 cases. [The first word of the title would not seem to be justified.]

H. Harold Scott.

KAMMER, V. **Fever in** *Ancylostoma duodenale* [*Necator americanus*] **Infection on the Upper Zambezi : a Review of 93 [932] Cases.** *East African Med. J.* 1944, July, v. 21, No. 7, 216–20, 1 chart.

An African native of Northern Rhodesia, aged about 25 years, strongly built and well nourished, was admitted to hospital complaining of slight pain in the left upper part of his abdomen, probably of about one month's duration. He was not anaemic and no other symptoms or signs of disease could be found on examination. His blood, urine and faeces were examined with negative results. His temperature rose to 100°F. on the evening of the day of admission and again on the morning of the 4th day ; then it fluctuated between 100°F. in the mornings and 103°F. (gradually falling to 101°F.) in the evenings until the 10th day, after which it remained normal. On the 8th day eggs of *Necator americanus* were found in the faeces ; a dose of 60 minims [4 cc.] of carbon tetrachloride, followed by magnesium sulphate, was given on the ninth day. The temperature fell and the pain completely disappeared.

The author examined the records of 932 cases of hookworm [*N. americanus*] infection in the same hospital during the period 1937–1942 ; less than 1 per cent. had any accompanying fever, and in such cases the temperature lasted only for about two days and was usually about 100°F. Among various possible causes of fever in this case, an allergic reaction due to previous hookworm infection is considered to be the most likely one.

[The paper is concerned solely with *Necator americanus* ; the name *Ancylostoma duodenale* appears only in the title, an obvious slip, as is also the number 93 for 932].

J. F. Corson.

FLEMING, A. McK. **A Case of Intractable Diarrhoea and High Eosinophilia due to Hookworm.** *East African Med. J.* 1944, July, v. 21, No. 7, 221–2.

This is a report of a case of hookworm infection in a European, acquired, apparently, by a single exposure of short duration. Mr. X and his wife, taking a walk along the sea shore north of Mombasa, Kenya Colony, on July 3rd 1943, came to a muddy stream, about 10 yards wide, and removed their shoes and waded across ; Mr. X stood in the water for a few minutes while his wife waded straight through. Four days later Mrs. X developed itching and redness of the left foot and on the following day her husband had a similar but more severe eruption on his right foot, consisting of a " mass of red pimples on the sole and outer side of the foot, each two or three millimetres in diameter." The pain and eruption gradually subsided within the next 10 days. On July 27th he complained of slight nausea, headache, lethargy and irritating cough. Examination of his blood and urine was negative. On July 31st he had a sudden attack of diarrhoea and during the next month he suffered from colic, extreme flatulence, and watery diarrhoea with 2 to 12 motions per day. His abdomen was usually distended and flatulent, and tender in the umbilical

region. His appetite was fair and he had no nausea or vomiting but lost 16 lb. in weight. All medicinal treatment failed to relieve the condition. The faeces were examined eight times between August 4th and 31st without result, but on September 1st—59 days after the seashore walk—scanty ova of hookworm were found and he was then treated for hookworm infection. On August 27th his blood showed 17,200 leucocytes per cmm. and 40 per cent. were eosinophiles ; the erythrocyte count showed 4,720,000 per cmm.

Gradual improvement followed ; it was necessary to give six treatments with oil of chenopodium and carbon tetrachloride and even at the time of writing [May or June, 1944 ?] hookworm ova were sometimes found in the stools. On May 11th, 1944, a differential blood count showed eosinophiles, 11 per cent. Mrs. X also became infected but had no symptoms and was promptly cured by two treatments. [The species of hookworm in this case is not given. Infection following one exposure is recorded by ASHFORD in " The Practice of Medicine in the Tropics " by BYAM and ARCHIBALD, 1923, v. 3, 1849.]

J. F. Corson.

ALLEN, H. C. **Eosinophilia in the South Pacific.** *U.S. Nav. Med. Bull.* 1944, June, v. 42, No. 6, 1241–4, 1 chart.

At a base hospital in the South Pacific 17,502 differential leucocyte counts were made between June 1942 and September 1943 ; in 987 of the blood films there were over 10 per cent. of eosinophils. The proportion of patients with eosinophilia among hospital admissions increased more or less steadily from 1·4 per cent. in June 1942 to 20·3 per cent. in September 1943 ; this is shown by curves which give the figures for army, navy and marine personnel and show that the increase occurred in all three branches. It was suspected that the eosinophilia was caused by helminth infestation, and in August 1943, as patients were then being kept in hospital longer than before, greater attention was paid to stool examinations. In this month 139 patients had eosinophilia of over 10 per cent. In 71 the faeces were examined and in 30 helminth infestation was found ; 28 had hookworm, 1 had *Strongyloides stercoralis*, and one had both these infestations. During the whole period of 16½ months 16 patients had an eosinophilia of over 50 per cent. ; hookworm ova were found in eight, *Strongyloides stercoralis* in one, and both infestations in one. The author thinks that a large part of the eosinophilia was due to hookworm infestation. *J. F. Corson.*

v. ENGEL, R. Geheilte Strongyloides stercoralis-Infektion. [**An Instance of the Cure of an Infestation with** *Strongyloides stercoralis.*] *Deut. med. Woch.* 1944, Mar. 31, v. 70, No. 13/14, 188–9.

The author briefly reviews the records of strongyloidiasis in Hungary. No references are given, but these records include an epidemic of 38 cases in a nursery school in Budapest in 1926, and an infestation of a man aged 21 in 1928. LÖRINCZ found the larvae of this species in nine cases (0·6 per cent. of all the subjects whom he studied) when the stools were systematically examined. He found these larvae in different regions of Hungary, but they were more often present in the provinces than in Budapest and were more frequent in males under 15 than in older people. von Engel describes one case found in Kassa, where the infestation has not hitherto been recorded. The patient was a woman aged 26 ; she had lived in the Kassa region since 1929, except for a visit to Budapest, lasting six weeks. She had never been seriously ill and had suckled her third child. Her illness began with a marked " stitch " at the right costal border, followed by repeated severe cramps. There was irregular fever (39–40°C.), perspiration and variable appetite. The stools were normal. The

patient was very nervous. There was no jaundice, but bile pigment was found in the blood; there was marked hypochromic anaemia with an eosinophilia of 19 per cent. Four days after treatment for inflammation of the gall bladder the temperature was normal and the pain and tenderness in the liver region had disappeared. But duodenal intubation revealed larvae of *Strongyloides stercoralis* in the bile. In bile A and B there were 70–80 larvae, but there were few in the thinner bile C. No eggs were found in either the bile or the stools. Isolated larvae were found in the stools and more were found after purgation. The patient could not remember any skin eruption. The stools of her husband and children were negative. The origin of the infestation was not traced.

After treatment of the anaemia the author unsuccessfully tried sulphaguanidine, acridin, carbon tetrachloride, lubisan [a resorcinol compound, Bayer Products] and filix mas with thymol. Lubisan decreased the number of larvae from 70–80 to 5 or 6. Intravenous neosalvarsan also reduced the number of larvae. Gentian violet was then tried. On the first day 250 cc. of a 1 per cent. solution were introduced into the duodenum in quantities of 50 to 60 drops per minute. The patient reacted badly, with continuous retching; some 100 cc. of the gentian violet were vomited and slight collapse followed. The next day 5 or 6 larvae were found in the duodenal contents. The patient was then given only 100 cc. at a slower rate. On the fourth day there were no larvae. On the fifth day 50 cc. and on the sixth day 100 cc. of the gentian violet solution were given. No larvae were found after this and none was found a week later in either the stool or duodenal contents. The blood picture had improved and the patient was regarded as cured. [Craig & Faust (*Clinical Parasitology*, 1943, p. 254), state that viable larvae may be passed for days or weeks after the completion of the course of treatment with gentian violet which they describe, but that the parasitic females may subsequently die. *c.f.*, also Shikhobalova and Semenova, this *Bulletin*, 1944, v. 41, 411; Levin, *ibid.*, 411; and Lowe and Lancaster, *ibid.*, 951.]

G. Lapage.

Kasimov, B. [**First Case of Ostertagia ostertagia in Man in Azerbaidjan.**] *Med. Parasit. & Parasitic Dis.* Moscow. 1943, v. 12, No. 5, 81. [In Russian.]

The author found in the small intestine of man at autopsy one specimen of *Ostertagia ostertagia* (Stiles, 1892) [presumably *Ostertagia ostertagi* (Stiles, 1892)] and one specimen of *Trichostrongylus colubriformis* [= *Trichostrongylus instabilis*]. *Ostertagia ostertagi* [normally in the fourth stomach of cattle and sheep] has not been recorded before from man. [*T. instabilis* has been recorded as an occasional parasite of man].

Kasimov describes the specimen of *Ostertagia ostertagi* found by him as follows:—

Length, 6–9 mm., with a maximal width at region of the buccal papillae of 0·111 mm. Width at the region of the cervical papillae 0·042 mm., at the posterior end of the pharynx 0·051 mm. and at the level of the excretory pore 0·038 mm. Pharynx 0·579 mm. long with a maximum width at the point of transition to the intestine of 0·042 mm. Excretory pore 0·321 mm. from the head end. Cervical papillae 0·343 mm. from the head end. Dorsal ray of the bursa 0·064 mm. long, bifurcating into two branches at a distance of 0·047 mm. from its base. The two secondary branches again divide into two hardly noticeable twigs. The dorsal ray reminded the author of the dorsal ray of *Ostertagia grühneri*, parasitic in the reindeer (see Skryabin, *Vestn. sovrem. Vet.*, 1929, p. 334, and Travassos, *Monogr. Inst. Osw. Cruz.*, 1937, v. 1, 108). Spicules equal, golden in colour, 0·214 mm. long with a maximum

width 0·021 mm. with truncated distal ends forming thick branches and two thin branches. Gubernaculum grey in colour, narrowing at the distal end, 0·060 mm. long and 0·012 mm. wide at its distal end. [*cf.* KASIMOV, this *Bulletin*, 1943, v. 40, 326, in which paper the author records the finding in man of *Ostertagia circumcincta*. It is not clear from the account of the specimen of *O. ostertagi* given in this paper whether the specimen found was actually parasitic or merely a passenger in the human intestine. Theoretically it would be possible for isolated specimens of this species, or of *O. circumcincta*, to survive in the human intestine for a while after the ingestion of uncooked or partially cooked abomasum of cattle or sheep or goats. *Ostertagia ostertagi* especially might be so ingested, because it occurs in nodules in the abomasum. Both species are adapted to life in the acid environment of the fourth stomach of the ruminant and not to the alkaline environment of the human small intestine.] *G. Lapage.*

GUHL, R. Ueber Ascaridiasis der Gallenwege. [**Ascariasis of the Bile Ducts.**] *Schweiz. med. Woch.* 1944, June 3, v. 74, No. 22, 600–605, 3 figs. [26 refs.]

Human ascariasis has increased enormously since the end of the last war. Suggested causes of this increase are: more vegetables, salads, fruit and uncooked food are consumed; more people grow their own supply of vegetables and manure them with human excreta; malnutrition and lack of soap, with consequent uncleanliness, possibly also contribute; in addition, most carriers of *Ascaris* are unaware that they have the parasite; it is usually harmless, but its effects may be fatal.

The author describes two cases in detail. One was a woman, aged 47, with a history of vomiting and periodical colic in the right upper abdomen for five or six years. Treatment given six years before had evacuated 50 ascarids; further treatment six days before admission to hospital had evacuated three. Previous treatment had removed 30 gallstones. The patient died after the onset of circulatory collapse. There was no icterus of the skin. The leucocyte count was 11,600 (neutrophils 90·5 per cent., eosinophils 0·5 per cent.). At autopsy 20–30 ascarids were found in the liver and bile ducts, two in the stomach, 20–30 in the duodenum and ileum and two in the colon. The liver was enlarged 8 cm. beyond the costal border. The intrahepatic bile ducts were markedly dilated and one or more ascarids protruded from these; ascarids were also found in them in sections of the liver. The hepatic duct was occluded by four ascarids; there were none in the gall bladder or cystic duct. The central lobular veins were markedly dilated and the capillaries between the strands of liver cells were tightly packed with nucleated cells. There was interstitial hepatitis with cellular infiltration (lymphocytes, neutrophils and eosinophils), which was especially dense around the bile ducts, where eosinophils were numerous. The heart muscle showed brown atrophy, some fatty degeneration and subendocardial haemorrhages.

The second patient was a woman, aged 71. She had pain in the liver region and upper abdomen and marked skin icterus. There was no history of ascariasis, but eggs of *Ascaris* were found in the stools and in A and B bile obtained by duodenal intubation. Symptoms of cholangitis and peritonitis developed and the patient died. The liver was enlarged three finger-breadths. There was bilirubinuria, and leucocytosis of 28,400 (neutrophils 91·5 per cent. with a marked shift to the left, but no eosinophils). Autopsy disclosed a subphrenic abscess. The much dilated duodenum contained five ascarids; one of these was halfway up the ductus choledochus, which was the size of the index finger. Some centimetres below its exit from the liver the duct was occluded by a yellowish-brown stone ($2\frac{1}{2} \times 1$ cm.); between this and the wall of the duct was a

dead, crumpled *Ascaris* (fig. 3). The cystic duct was occluded and the gall bladder shrunken and embedded in cicatricial tissue. In the liver, under a fibrinous crust, there were numerous yellowish, solitary or grouped abscesses, mostly composed of neutrophils and surrounded by hyperaemia; these were all near the markedly dilated bile ducts, around which there was considerable overgrowth of connective tissue and inflammatory change. The liver capillaries were much dilated and the liver parenchyma brownish-red, atrophic and icteric. The duodenal mucosa was hyperaemic, swollen and covered with tough mucus.

The author discusses at length the literature and the features of his two cases. In Europe, he says, women are most often affected; in Japan the men. In the bile ducts *Ascaris* is most often found in the ductus choledochus. Its effects may be mechanical (dilatation of the bile ducts, etc., lesions of their mucosa, promotion of the flow of bile by their movements); reflex (colic, etc.); anaphylactic; or bacterial infection may result. Their toxins may perhaps cause biliary cirrhosis. Worm nodules under the capsule of the liver may be mistaken for carcinomatous metastases. No anthelmintic is known which will affect the ascarids in the bile ducts, into which drugs may drive them deeper. The killing of them in these ducts may have dangerous toxic or infective results. Surgical removal with drainage of the ductus choledochus and the hepatic duct, and complete removal of all ascarids from the intestine, are recommended. If the ascarids are very deep, massage of the liver may help their removal; or they may be sucked out through a tube connected to a water pump. Ascarids may escape through drainage tubes in the ductus hepaticus or ductus choledochus. In one case recorded by FISCHER (no reference is given) 51 ascarids escaped in this way. *G. Lapage.*

SCHNELLE, G. B. & YOUNG, R. M. **Clinical Studies on Microfilarial Periodicity in War Dogs.** *Bull. U.S. Army Med. Dept.* 1944, Sept., No. 80, 52–9, 4 charts.

Observations were made on the periodicity of the microfilariae of *Dirofilaria immitis* in 54 infected dogs. The blood of four dogs was examined two-hourly from 8 a.m. to 9 p.m., the microfilariae being counted. The method used was to take 2 cc. of blood from the radial vein, allow it to clot, remove the serum and examine 0·1 cc. of the serum spread out on a microscope slide. The numbers of microfilariae rose from 8 a.m. to 1 p.m. to a moderate height, fell somewhat to 3 p.m. then rose sharply to a maximum for the day at about 4.30 p.m. and again fell, somewhat rapidly, to 7, 8 or 9 p.m. This periodicity pattern was much the same in all the other dogs. As the pattern was different from those of other authors, the time of the chief meal was changed from 3 p.m. to 11 a.m. for a few days; this was followed by changes in the periodicity pattern, varying in different dogs, but the authors think that the patterns might have shown greater uniformity if the new feeding time had been continued for a longer period. Exercise appeared to have no influence on the counts.

Some dogs were anaesthetized with pentobarbital sodium and the microfilariae in the splenic vessels counted; the results suggested that the spleen might be a reservoir for microfilariae. After ligation of the splenic artery, in three dogs, the microfilarial count in the peripheral vessels (radial and jugular veins) was higher than before ligation. The same occurred within five minutes after an intravenous injection of epinephrin hydrochloride. Splenectomy, in two dogs, was followed by a higher afternoon count of microfilariae. When epinephrin was injected into the splenectomized dogs the effects, if any, on the microfilarial count were irregular.

The authors concluded from their investigation that microfilariae did not appear in the blood until about eight months or more after exposure of the dogs

to infection. [See also this *Bulletin*, 1935, v. 32, 277 ; 1936, v. 33, 132, 133, 595 ; 1938, v. 35, 385 ; 1939, v. 36, 155.] *J. F. Corson.*

FOGEL, R. H. & HUNTINGTON, R. W., Jr. **Genital Manifestations of Early Filariasis.** *U.S. Nav. Med. Bull.* 1944, Aug., v. 43, No. 2, 263–70.

The early signs of filariasis, *viz.*, lymphangitis and lymphadenitis [called " mumu " by the natives of Samoa, see BUXTON, this *Bulletin*, 1929, v. 26, 436] was found to be very prevalent among the American marine and naval personnel stationed in the South Pacific Islands. No microfilariae were found in the blood or tissue fluids although a high percentage of the adult natives showed blood infection. The chief insect vector of the infection was *Aëdes scutellaris* (*variegatus*).

The lesions of " mumu " or acute filariasis were of two kinds : (1) a persistent nodular lesion around an adult worm or its remains ; (2) a transient diffuse lymphangitis, presumably due to sensitization. The latter formed most of the manifestations and it was common for both the genitals and one or more extremities to be involved. It was not associated with bacterial infection. In some cases there were swellings of the areolar tissue, obviously allergic and probably of the same nature as " Calabar swellings " [though of different origin].

Constitutional symptoms.—Fever was uncommon but headache, vertigo, blurring of vision, and nausea were severe in some cases, and muscle pain and spasm, and chest pain were common.

Pathology.—Genital tissue was available in two cases only : in a man with filarial funiculitis, who died of coronary disease, MICHAEL (personal communication) found diffuse oedema with lymphocytic and eosinophilic infiltration of the cord but there was no anatomical obstruction in the epididymis or vas deferens ; in the other case an epididymo-vasectomy was performed and a similar condition was observed.

Physical signs.—The following were seen : (1) swelling and oedema of the spermatic cord, the earliest and most characteristic sign ; (2) orchitis or hydrocele ; (3) epididymitis ; (4) vasitis ; (5) hydrocele ; (6) oedema of the scrotal skin ; (7) inguinal adenitis.

Three patients worked in the hospital and could therefore be closely observed. When the abdominal pain began the spermatic cords were not swollen but within 12 hours there was a palpable swelling high up in the inguinal canal ; this gradually extended down the cord and at 24 hours the external abdominal ring was swollen and tender, and within the next 24 hours the swelling had reached the scrotum. Scrotal oedema, when present, was always on the side where funiculitis existed but was not related to inguinal adenitis.

In differential diagnosis early filariasis must be distinguished from appendicitis, hernia and variocele of non-filarial origin ; it is easily distinguished from the epididymitis of gonorrhoea.

Treatment.—No drugs that were tried had any good effect ; rest in bed with scrotal support was beneficial. Operations on hydrocele, hernia and varicocele are contra-indicated. [See also this *Bulletin*, 1944, v. 41, 303, 304, 599, 600, 860.] *J. F. Corson.*

BROWN, H. W. **The Treatment of Filariasis** (*Wuchereria bancrofti*) **with Lithium Antimony Thiomalate.** *J. Amer. Med. Ass.* 1944, Aug. 5, v. 125, No. 14, 952–8, 3 charts. [Refs. in footnotes.]

Anthiomaline is lithium antimony thiomalate

$$\left.\begin{array}{l} LiO.CO.CH-S \\ \quad\quad\quad\;\; | \\ LiO.CO.CH_2 \end{array}\right\}^{3} Sb.9H_2O$$

A review is given of previous work about anthiomaline in the treatment of filariasis. Two reports [CHOPRA & RAO, and HAWKING, this *Bulletin*, 1940, v. 37, 656 ; 1941, v. 38, 151] state that it had little effect in reducing the number of microfilariae (*W. bancrofti*) in the peripheral blood ; the author and his colleagues found it effective against *Dirofilaria immitis* in dogs.

The present work concerned 12 patients in St. Croix, Virgin Islands, who were admitted to hospital for some other cause than filariasis ; microfilariae were present in the blood. In the case of adults anthiomaline 180 mgm. (3 cc.) was injected intramuscularly daily, beginning with a half dose on the first day. Blood was taken from a vein at 10 p.m. for counts of the microfilariae. The number of microfilariae in control untreated patients remained constant for the six months' period of observation. The course of the drug usually lasted 13–26 days, the total quantity given being usually about 19–50 cc. The patients were observed for four to five months following the treatment.

Twelve patients received a full course of treatment ; in a thirteenth the treatment had to be abandoned after the first dose on account of asthmatic attacks. In one person, there were no microfilariae in the blood, but the femoral and inguinal lymph glands were enlarged ; there was no immediate response, but five months later he reported that the glands were no longer painful on exercise. In the other eleven cases, at the end of treatment, the microfilariae were more numerous in two cases and much less numerous in nine cases. After four to five months, the number of microfilariae was unchanged in one case and greatly diminished (85–100 per cent.) in the other ten.

As regards toxic reactions, vomiting and epigastric pain occurred in 40 per cent. [presumably 5] of the patients, especially towards the end of the course. Local reaction at the site of injection was absent in most patients although firm intramuscular painless masses often developed. Fever occurred in two patients towards the end of treatment. Arthritic pains occurred in one case. There was no evidence of renal damage. Six patients developed transitory rashes which did not spread although treatment was continued. No pathological changes due to the death of the adult worms or of the microfilariae were observed. Anthiomaline is not the ideal drug for the treatment of filariasis but the results indicate that further investigations of its value should be made.

F. Hawking.

NETTEL, R. Onchocercosis. Biopsia y su interpretacion clinica. [**Biopsy and its Clinical Interpretation in Onchocerciasis.**] *Medicina.* Mexico. 1944, July 10, v. 24, No. 463, 265–73, 6 figs.

The author describes the technique of biopsy for the diagnosis of onchocerciasis. Biopsy of skin of the face or neck is usually most favourable, because most nodules occur in these regions ; but the microfilariae may be found a long way from the nodules from which they originate, *e.g.*, in the foot from nodules in the trochanteric region or even further away [see also NETTEL, this *Bulletin*, 1944, v. 41, 305] ; they may also cross from one side of the body to the other. They can be found in the subcutaneous tissue. Biopsies may be negative because the nodules contain nematodes which are immature, or females which are mature but are unfertilized, or fertilized females which have not yet produced larvae, or larvae which have not yet left the nodules. Biopsies may be positive when inspection of the skin reveals nothing abnormal, whether there is a history of onchocerciasis or not [see this *Bulletin*, 1923, v. 20, 945]. Other types of case are :—

1. Patients with oedema of some region, increase of local temperature and indurated skin. This occurs most often on the face, shoulder, arm, forearm and

hand and is known locally as "coastal erysipelas". Biopsy is negative or microfilariae are scanty.

2. Patients in whom inspection shows abnormality of some region of the body. The skin is thickened and has an olive green colour, but the local temperature is normal. Biopsy reveals numerous microfilariae. The skin of the ears, nose and cheeks is most often affected and the disease is locally known as "purple disease" ("mal morado").

3. Patients with the onchocerciasis facies, who have been parasitized for several years. They look prematurely old and biopsy reveals numerous microfilariae all over the body. *G. Lapage.*

MAZZOTI, L. & LOZANO HUBE, Elena. La prueba intracutanea de Bachman para el diagnostico de la triquinosis en 1,000 personas sanas de la ciudad de Mexico. [**The Diagnosis of Trichiniasis by the Bachman Intracutaneous Test in 1,000 Healthy Persons in the City of Mexico.**] *Rev. Inst. Salubridad y Enfermedades Trop.* Mexico. 1944, Mar., v. 5, No. 1, 31–6. English summary.

The healthy persons tested were 603 women, 61 school children and 336 elderly people of both sexes in a charitable institution. The antigen used was prepared by the technique of BOZICEVICH [this *Bulletin*, 1939, v. 36, 847]. It produced, in susceptible individuals, reactions similar to those produced by antigen received from the National Institute of Health. The authors injected 0·01 cc., the reaction being read 30 minutes later; the dilution used is not stated. A papule of 3 mm. or more in diameter with or without pseudopodia was regarded as positive, this being, the authors say, the criterion recommended by Bozicevich (*loc. cit.*) when 0·01 cc. of a 1 : 10,000 dilution is used. By this criterion their percentage of positives was 17·9. Using the criteria recommended by MCNAUGHT, BEARD & MAYERS [this *Bulletin*, 1942, v. 39, 194] in which a papule of 4 mm. in diameter, obtained by the injection of 0·01 cc. of antigen, is regarded as approximately equivalent to one of 7 mm. in diameter obtained with 0·1 cc. of antigen at a dilution of 1 : 10,000, the authors' percentage of positives was 13·8. Using the instructions issued with Lilly's antigen, and taking a papule of 8 mm. diameter obtained with 0·01 cc. of antigen as approximately equivalent to one of 15 mm. obtained with 0·1 cc. of antigen, the authors' percentage of positives was only 2·2. The results confirm, the authors think, the view of some workers that more precise data are required before this test can be correctly evaluated. *G. Lapage.*

TAYLOR, E. L. **A Search for Endemic Areas of Trichinosis in Great Britain.** [Correspondence.] *Nature.* 1944, June 17, 745–6.

This paper is reviewed in *Bulletin of Hygiene*, 1944, v. 19, 767.

DEFICIENCY DISEASES.

PAULLEY, J. W. & AITKEN, G. J. **Case of Cardiovascular Beri-Beri.** *Lancet.* 1944, Sept. 30, 440–42.

Another well-recorded case showing that the term "beriberi" covers more varied conditions than the classical dry and wet types described in the text-books. Seven years ago WEISS & WILKINS called the attention of the medical

world to cardiovascular disturbances in patients with peripheral neuritis ascribed to alcohol excess; they noted the frequency of this in the United States and they expressed the view that some such cases at least were fundamentally beriberi. Since certain of the signs characteristic of text-book beriberi are absent, Weiss and Wilkins suggested that the name at first given to the syndrome "beriberi heart," should be replaced by "cardio-vascular beriberi," because the heart failure was largely brought about by changes in the peripheral circulation, in combination with diet deficiencies.

The subject whose case is here recorded was a man of 45, who had been in the Air Force in Persia and Malta for 2½ years and in Cyrenaica for 7½ months. He noticed, apparently suddenly, an aching of the calves with shortness of breath and rapidity of his heart's action. He was an athletic man for his age. His legs became swollen, and soon afterwards his arms also; this swelling was worse at the end of the day, subsiding to some extent during the night. A medical officer put him through an exercise-tolerance test, and the pulse had not returned to normal in 1½ minutes. After a week in bed the oedema subsided, but any exertion brought on dyspnoea and palpitation. The calves were tender, even the pressure of the bed-clothes causing discomfort. He was admitted to hospital. At that time the pulse was 84 per min., its character full and regular; the apex-beat of the heart was diffuse, but there were no thrills nor murmurs, the pulmonary second sound was accentuated, the blood-pressure 182/100. Râles were heard at the bases of the lungs, the liver and spleen could be felt two fingers'-breadths below the costal margin, but were not tender. Reflexes were present, the knee-jerks exaggerated, supinators sluggish as was also the right ankle-jerk; there was no impairment of sensation to cotton wool or pin-prick, but the calves were very tender. Inquiry into the diet revealed that he had had half rations at Malta and "desert diet" for more than two years; for a month and a half he had had no fresh food. His alcohol consumption was "5–6 tots a day," including Cyprus brandy, sherry, liqueurs, local gin or whisky. The arm-tongue circulation time was just above the upper limit (16 sec.) of Fishberg, the arm-lung nearly twice the normal (12 sec. in place of 4–8); no electro-cardiographic abnormality. Vitamin B_1 excretion was less than one-tenth the normal minimum (1·6 units in place of 16–56), and after a subcutaneous test dose of 5 mgm. thiamin the output was only 11 I.U., or about one-twentieth of the normal.

The patient was made to rest and was given a diet high in protein and calories with thiamin, 10 gm. daily, at first subcutaneously, later orally. After 40 days there was no oedema, no aching of calf muscles, no dyspnoea or palpitation on exertion; the arm-lung circulation time was 7 sec., the blood-pressure 142/94, exercise tolerance 76–108–76—in short, he left hospital recovered.

H. Harold Scott.

ROBERTS, D. W. & NAJJAR, V. A. **A Case of Pellagra developing on a Hospital Ward in a Patient receiving Vitamin B Complex.** *Bull. Johns. Hopkins Hosp.* 1944, June, v. 74, No. 6, 400–405, 4 coloured figs.

The case here reported is that of a 12-year-old girl (white) admitted to the Harriet Lane Home, Baltimore, on account of anorexia, fatigue and loss of weight of more than a year's duration, who, after eight weeks under care in hospital on the hospital diet supplemented with yeast, developed signs which led to a diagnosis of pellagra. These consisted of pigmentation of the backs of the fingers, limited above by the line of the knuckles, and about the elbows, together with a red tongue which cleared up rapidly after the administration of 100 mgm. nicotinamide four times a day by mouth. The skin cleared up very much more slowly.

The diagnosis of pellagra was confirmed by failure to detect "fluorescent factor F2" (N-methyl nicotinamide derivative) in the urine even after a test dose of 100 mgm. nicotinamide by mouth. The past history, as first obtained, was unimportant and detailed investigations were negative, but subsequently it was revealed that the child had suffered for 18 months, and was still suffering, from diarrhoea (the child had been allowed access to the lavatory). The cause of the diarrhoea was not ascertained after extensive examination and it did not respond to nicotinic acid, sulphasuxidine and sulphaguanidine. The preparation of yeast was found to contain very little nicotinic acid. There ensued an attack of cardiac failure, to which the child nearly succumbed, treated with digitalis, intramuscular liver extract and intravenous vitamin B concentrate. From this time improvement took place and the diarrhoea gradually ceased.

The authors conclude that as the result of some obscure intestinal disorder (possibly a regional ileitis) there was interference with the absorption of nicotinic acid by the bowel. *H. S. Stannus.*

GHALIOUNGUI, P. **Secondary Pellagra.** [Correspondence.] *Lancet.* 1944, Sept. 23, 422–3.

The author refers to an annotation in the *Lancet* of June 3rd, 1944, entitled "Secondary Pellagra," which deals chiefly with a paper [on pellagra in the U.S.A.] by BEAN, SPIES & BLANKENHORN (*Medicine*, 1944, v. 23, 1) and which expresses the view that "the main factor involved in the production of so-called secondary pellagra is malnutrition among large sections of the inhabitants, such as is unknown in Britain."

In this letter Ghalioungui writes of pellagra in Egypt and states that it occurs there after severe protracted diarrhoea and in prisoners on heavy manual work who often have intestinal disease as well. The only important group consists of cases of *endemic pellagra*, as seen in the fellaheen. He gives reasons for the view that pellagra is closely related to helminthic infection, especially schistosomiasis and ankylostomiasis. The diet of the fellaheen is probably only just sufficient, so any disturbance of absorption, or any excessive demand by hard work, will upset the balance. All pellagra in Egypt might be considered "secondary" but the author sees no point in distinguishing between primary and secondary pellagra. *J. F. Corson.*

FISHER, G. E. **The Esophageal Manifestations of Pellagra.** *Southern Med. J.* 1944, Aug., v. 37, No. 8, 446–8.

The author states he has been "unable to find any description of the mucosal lesions in the esophagus of persons suffering from pellagra." Oesophagoscopy was carried out on 17 pellagrins complaining of dysphagia, 24 to 72 years old, of whom 12 could not take any solid food. The mucous membrane was intensely hyperaemic and in some cases oedematous, with multiple tiny ulcers present in nine. Barium studies in eight showed small constricted areas corresponding to those in which ulceration was present. All the patients had glossitis. Several are mentioned as presenting haemangioma-like lesions of the conjunctiva.

After treatment with nicotinic acid, riboflavin and thiamin had been instituted the dysphagia was relieved in from three to eight weeks. Only one case is stated to have been re-examined; in that case the mucous membrane was normal. *H. S. Stannus.*

McCreary, J. F. & Tisdall, F. F. **Further Studies on the Relationship of Corneal Vascularization to Riboflavin Deficiency.** *Canadian Med. Ass. J.* 1944, Aug., v. 51, No. 2, 106–10, 2 figs.

Reference should be made to a previous paper [this *Bulletin*, 1944, v. 41, 63]. In this summary the authors state " (1) The results obtained from photographing the corneoscleral junction and by an examination with a slit lamp are not significantly different." Elsewhere, however, they say " vessels which do not contain blood are more difficult to see in photographs than with slit-lamp examination . . . with black-and-white photographs the corneoscleral transition zone is almost indiscernible from the cornea proper, thus making assessment of the extent of invasion in relation to this zone difficult . . . in the photograph it is difficult to distinguish between vascularization in this zone and that of the cornea proper." [The only advantage of the photographic method would therefore appear to be that it provides a permanent record of blood-containing vessels. It can in no way replace slit-lamp microscopy.]

" (2) A study to demonstrate the effect of riboflavin on corneal vascularization has been carried out." The subjects of the investigation consisted of (*a*) 16 persons who had lived for a year past on a diet which when served contained 2·9 mgm. of riboflavin per diem ; these were the controls, their diet remaining unchanged during the inquiry ; (*b*) 25 persons on the same diet, to which a supplement of 3·3 mgm. of riboflavin thrice daily was added for two months. " Under the conditions of this study there was no consistent change in corneal vascularization in either the treated subjects or the controls."

No correlation could be established between any changes in corneal vascularization and any change in symptoms.

The authors conclude : " So far as this study shows, it seems that a uniform peripheral corneal vascularization is not a safe basis for a diagnosis of riboflavin deficiency." [It is important, however, to observe the method of notation adopted in this study. Cases were divided into groups according to four stages :—0, no vessels beyond the sclera ; 1, vessels present in transitional zone, by which the authors appear to mean the limbus ; 2, some vascular twigs passing into the clear cornea ; 3, vascular loops in clear cornea. Their figures are :—

	Stage 0	Stage 1	Stage 2	Stage 3
16 controls	1	4	10	1
25 supplements	1	15	8	0

In the experience of the reviewer stage 1 is not a stage in vascularization but within the normal, stage 2 may contain many cases which should be considered as within limits of normal. This leaves only a single case out of the total 41 which may have resembled the condition commonly ascribed to riboflavin deficiency.] *H. S. Stannus.*

HAEMATOLOGY.

Murphy, R. C., Jr. & Shapiro, S. **Sickle Cell Disease. I. Observations on Behavior of Erythrocytes in Sickle Cell Disease.** *Arch. Intern. Med.* 1944, July, v. 74, No. 1, 28–35. [25 refs.]

It would appear that this is merely the first of a series of papers on this interesting but obscure condition—interesting because of the recognition of its

increasing prevalence, obscure because of the many as yet unsolved problems connected with it. Sicklaemia seems to be much more common than is usually believed. It is estimated that *at least* 7 per cent. of all American negroes show it. Though the sickling may be affected by environmental factors it is "a property inherent in the erythrocytes and not dependent on the other elements of the blood."

The source of blood for the authors' studies was a male Negro, 21 years old, with severe sickle-cell disease. The authors, instead of placing a coverslip on a drop of blood and sealing the edge, apply a coverslip, on which a thin film of petrolatum has been spread, to a drop of blood and press it down; thus an even suspension is formed free of air-bubbles. Sickling begins with a concentration of haemoglobin at the periphery ("doughnut" appearance); then a thinning occurs at some point and the cell ruptures to form a crescent. As soon as sickling occurs the corpuscle, which was mobile, becomes fixed, rigid and brittle. This assumption of abnormal shape takes place whether the cells are in homologous serum, foreign serum or saline, but is more marked in whole fresh blood than in serum or saline solution. It is, therefore, "a characteristic inherent in the susceptible erythrocyte itself." When exposed to air, as by raising the coverslip, the sickle cells return at once to the normal shape. [This is strange, seeing that the corpuscles are said to have ruptured]. In other words, corpuscles with oxygenated haemoglobin do not sickle; they do so only when the haemoglobin is reduced. Again, the *p*H has *per se* no effect as regards sickling. Further studies convinced the authors that variations in ionic balance play no part in the sickling; nor, probably, is it due to complex metabolic change, for it is rarely seen in reticulocytes, normoblasts and young forms. Further investigations may show to what extent oxygen tension or the degree of dissociation of haemoglobin—"variations in the sickling threshold"—may explain crises in the disease of sicklaemia. In their summary the authors state: "Sickling is a property inherent in the susceptible erythrocyte. It appears to be encouraged by coagulation of the blood specimen. Erythrocytes sickle at various specific thresholds as determined by the ratio of dissociated to combined haemoglobin. There is evidence to indicate that as the cells age the sickling threshold becomes lower." *H. Harold Scott.*

MALHOTRA, R. P. & CHHUTTANI, P. N. **A Case of Cooley's Anaemia.** *Indian Med. Gaz.* 1944, May, v. 79, No. 5, 198–9, 1 chart.

COOLEY, in 1927, first described a remarkable anaemia associated with splenomegaly and bone changes, occurring almost exclusively in children of Mediterranean origin. Since then cases have been described almost all over the world and with rare exceptions it has been possible to trace some admixture of blood from Mediterranean stock. However, four cases have recently been seen in India and another has now been added to the list by the present authors. The child, aged four years, was of pure Punjabi stock. He had anaemia of the characteristic type, the red cells showing great anisocytosis and many primitive forms, splenomegaly and the typical changes seen in the bones of the skull. Unfortunately no mention is made of possible malarial infection.

Janet Vaughan.

SUNDARAM, S. K. **Refined Liver Extracts in the Treatment of Nutritional Macrocytic Anaemias.** *Indian Med. Gaz.* 1944, June, v. 79, No. 6, 253–6. [12 refs.]

There has been considerable conflict of opinion in the past as to whether highly purified liver extracts like anahaemin are effective in nutritional macrocytic anaemia. Sundaram has described the treatment of 15 cases of nutritional

macrocytic anaemia with and without diarrhoea which, with two exceptions, responded well to refined liver extract of the anahaemin type. In one of the failures there was subsequently no improvement when crude extracts were given, or after blood transfusion. In both, septic and infestative inhibiting factors were present. In some cases there was a satisfactory reticulocyte response, in others, in spite of severe anaemia, there was a rise in red cells and haemoglobin to normal levels with only small increase in reticulocytes. He suggests that possibly too much emphasis has been laid in the past upon the reticulocyte response as a measure of the effectiveness of an extract, and that before discarding an extract as useless there should be a delay of six to eight weeks during which a constant watch is kept on the whole blood picture. Since the patients studied showed no improvement during a control period on a good hospital diet alone, without liver therapy, Sundaram concludes that the diet cannot be responsible, as has been suggested, for the improved condition. The total dose was approximately 12 cc. given intramuscularly in injections of 2 cc. on alternate days. The improvement in the blood picture was associated with a similar improvement in the glossitis and diarrhoea, whether fatty or not. One patient, seen in a subsequent relapse, responded equally well to large doses of marmite. The author admits that the action of crude extracts is more rapid than that of the purified extracts, but prefers the latter because of what he calls its " depot action." *Janet Vaughan.*

LOUW, A. & NIELSEN, H. E. **Paroxysmal Paralytic Hemoglobinuria.** *Acta Med. Scandinavica.* 1944, v. 117, No. 5/6, 424–36, 3 figs. [10 refs.]

Though describing a rare disease, this article is of the highest interest and calls for full abstract. According to the authors their case is only the fifth to be recorded in medical literature. As a preliminary they give the following classification of haemoglobinurias :—

A. Exogenous.
1. *Infections* : Typhoid fever, malaria, scarlet fever, sepsis.
2. *Poisoning* : Chlorates, phenols, pyrogallol, quinine, sulphonamides [they omit snake-venom].
3. *After blood transfusion.*
4. *Haff disease* [see *Bulletin of Hygiene*, 1942, v. 17, 197, where other references are given].
5. *Favism* [see below, p. 61, where other references are given].

B. Endogenous :
1. Cold haemoglobinuria [patient usually syphilitic].
2. March haemoglobinuria.
3. Chronic haemolytic anaemia [Marchiafava type].
4. Paralytic haemoglobinuria (myoglobinuria) [a better name].

It is the last which is the main subject of the author's paper. They give brief records of the four previous cases [STITT in *Tropical Diseases* merely says that it " has been reported in a few human cases "] : (i) A boy of 13 years, who had had a similar attack four years before, reported by Meyer-Bitz in 1911 ; (ii) A woman of 42, reported by Paul of Vienna in 1924 ; (iii) A man of 54, reported by Günther of Leipzig the same year ; (iv) An adult woman, reported by Hittmair of Vienna in 1925.

The details of the authors' case are as follows : A boy of 10 years was admitted to hospital as a suspected case of progressive muscular dystrophy. The family history of this was quite typical in the five generations inquired into. The first, a man with this disease, had emigrated from Sweden to Jutland ; he had two daughters free from the disease. One of these had four sons and four daughters and three of the sons were victims ; the other daughter had four

sons and six daughters and two of her four sons were attacked ; that is, five of eight males but none of the ten females of the third generation. In the next, two more males suffered, and the patient who is the subject of this article belonged to the fifth generation. This boy was in excellent health till the age of four years ; since then he had had repeated attacks of pain in the [leg] muscles and transient difficulty in walking, during which the calves were firm and tender and he passed "bloody urine." There was slight enlargement of the calf muscles. He left hospital nine days later (there being no symptoms in the interval) with the provisional diagnosis ? Incipient progressive muscular hypertrophy. Three weeks later he was again brought to hospital with a history of a sudden onset of intense pain in the legs when he was on the way to school. He had great difficulty in walking and his gait was laborious and waddling and obviously painful. He passed dark, reddish-brown urine, giving the reactions for albumin and blood, but no corpuscles were seen. Blood examination gave : red cells 4·3 millions, beginning to haemolyse at 0·44 per cent. NaCl, haemolysis complete at 0·35 per cent. ; white cells 6,200, Hb. 100 per cent., platelets 150,000. The leucocyte differential count was : neutrophiles 43, lymphocytes 51, monocytes 6 per cent. The urine was lighter next day and in three days was normal. Spectroscopic examination showed that the urinary condition was due to myoglobin and during the attack there was considerable creatinuria which disappeared as the urine cleared.

Comparison of the main features of paralytic myohaemoglobinuria and the hypertrophic form of progressive muscular atrophy shows that they possess several characters in common. The same muscles are attacked ; creatinuria is present, periodic in the former, permanent in the latter. If death occurs—and two of the four previously recorded did die—the muscles were seen to be pa'e ("fish muscles") and atrophic with striation indistinct, the fibres degenerated and fragmented, with increase in the number of nuclei. "Progressive muscular dystrophy and paralytic myoglobinuria may be different forms of the same disease, the latter representing the acute manifestation of the lesion, while progressive muscular dystrophy is the more chronic form of the disease."

In future, when cases of progressive muscular dystrophy are met with it would be of interest to inquire into the family history, bearing the foregoing facts in mind. *H. Harold Scott.*

JOSEPHS, H. W. **Favism.** *Bull. Johns Hopkins Hosp.* 1944, May, v. 74, No. 5, 295–8, 1 fig.

The case is recorded of a boy of five years, of Greek parentage, who, while in apparently perfect health, was attacked by abdominal pain accompanied by rise of temperature, jaundice and the passage of dark urine. He gave a history of a similar attack, lasting for ten days, eleven months previously. In the present attack there had been repeated mild epistaxis four days before the patient's admission to hospital. At the time of admission there was marked pallor, with jaundice, but no albuminuria. Blood examination gave red cells 1,900,000, white 28,700 per cmm., with occasional erythroblasts, haemoglobin 4·5 gm.

The only ascertainable cause was a meal of fava beans eaten two days prior to the onset of symptoms. One month after his admission, when recovery was practically complete (red cells four million per cmm., haemoglobin 13·5 gm.) he was given eight fava beans soaked in water and four days later symptoms indicative of favism appeared. Skin tests with extracts of the bean were negative, but this is often—one might say usually—the case for some time after an acute attack. Seeing, however, that the skin reaction is given in certain circumstances, favism is probably to be placed among the allergic diseases. Racially, the "Mediterranean race" is mostly susceptible (*cf.* Cooley's anaemia)

and the disease is common in Sardinia. The present patient was a Greek and the patient whose case was recorded by EADS & KASH [this *Bulletin*, 1944, v. 41, 236], was of Spanish stock. [The author has made two small slips. First, in stating that "only twice has it been reported in this country," *i.e.* the United States of America; secondly, that the fava bean is "not grown in this country." The two instances he refers to were reported by MCCRAE & ULLERY (*J. Amer. Med. Ass.*, 1933, v. 101, 1,389), and by J. E. HUTTON (*ibid.*, 1937, v. 109, 1618); in addition there is the one by EADS & KASH referred to above, reported in the *U.S. Nav. Med. Bull.* in November 1943. Secondly, though *Vicia fava* beans are usually imported, the plant is now, according to Eads and Kash, being cultivated in the United States. Hence it is not improbable that cases will be more frequently met with].

H. Harold Scott.

VENOMS AND ANTIVENENES.

COCHRAN, Doris M. **Poisonous Reptiles of the World: a Wartime Handbook.** *Smithsonian Institution War Background Studies No. 10* (*Publication 3727*). Wash. 1943, Mar. 19, 37 pp., 17 pls. (1 coloured) & 2 figs. [15 refs.]

This beautifully illustrated handbook gives a brief outline of the distribution, anatomical features and habits of most of the poisonous snakes and lizards of the world. The text is interesting and instructive in a general way, but is not apparently intended for a field worker.

A simple discussion of the differentiation between poisonous and non-poisonous reptiles, and possibly some elementary keys to identification would have greatly improved the book.

The descriptions of snakes are clear, but not always accurate. For example, the statement that spitting cobras "blow" their venom into the face of the attacker is incorrect. The ejection of venom is brought about primarily by muscular action, and the accompanying expulsion of air is of secondary importance. Further, there is no evidence that the snake "aims its venom at the eyes." The direction of the venom stream is determined by the attitude of the snake when spitting, and the aim can therefore be only in the general direction of the victim. The description of the effects of ejected venom on the intact eyes is highly coloured. The common effect of such venom is a painful, rapidly developing conjunctivitis, readily amenable to simple mechanical treatment by washing with saline or warm water.

The statement on page 16 that mussurana is "unaffected by the injury of the fangs" is loosely worded. The same applies to the description of the physiological activity of viperine poison, which is stated to "dissolve the endothelium cells composing the wall of blood and lymph vessels."

In the section on the African snakes, *Naja melanoleuca* should have been described as a black-and-white cobra since the common specimen has its dorsal black scales fringed or tipped with brilliant white and is usually splotched with white in the labial and neck regions. The description of *Naja nigricollis* is a little misleading. The commonest variety is black dorsally with steel grey belly liberally blotched and banded in the neck and throat with salmon pink (not simply with a "pair of large crimson blotches under the hood").

There are some curious omissions. For instance, the genera *Atheris* and *Atractaspis* are not referred to amongst African snakes, although the latter genus is one of the commonest poisonous snakes in the British West Coast Colonies.

The advice of the Appendix regarding the treatment of snake bite is dangerous. So many snakes, particularly the African cobras, dribble and spray their poison over the surface of the area bitten that all notes on first aid in snake bite should convey the warning that *additional cuts in the region of the bite must never be made until the area concerned has been well washed* (*with urine or sputum if no water is available*) *to remove venom from the surface.* Cutting in the region of an unwashed bite amounts to a possible further introduction of venom into the tissues. In dealing with snake bites, the dogmatic assertion on page 25 that in viper poisoning "the administration of alcoholic drink, even in small quantities, is absolutely fatal," is based on very slender evidence, and is certainly not the experience of the reviewer. Such comments are out of place in a booklet of this sort.

The general impression gathered in reading this little book is that it is a well illustrated museum guide, written around exhibition specimens.

B. G. Maegraith.

[Australian Military Forces.] **The Dangerous Snakes of the South-West Pacific Area.** 43 pp., 11 figs. & 3 pls. Notified in G.O.'s dated 1943. By Authority: Victorian Railways Printing Works, North Melbourne.—3480/43.

This is a very useful little handbook, well arranged and clearly written, designed for the intelligent layman, and including sufficient detail on most of the poisonous snakes of the Area. The text is divided into sections, for convenience for identifying specimens, and it contains useful drawings of the principal genera. There is an interesting introduction, which outlines the geographical distribution of snakes referred to in the text, and contains a useful general account of the habits of snakes and of the differentiation of venomous and non-venomous types. There is also a Key to the dangerous snakes of the Malaya Islands, Celebes and Philippines; of North Australia, New Britain, New Guinea and Ceram; and of the Solomon Islands.

The pamphlet also includes a good practical summary of snake bite and its first-aid treatment. It should be of real value to Medical Officers, and to other Officers and N.C.O.s in charge of troops.

As is almost inevitable in a small work, there is some imbalance in the description of the genera, distinguishing features of several species being given in some genera but not in others. There is also a change in notation in the heading of the section devoted to the tiger snake, which may be confusing to the reader: thus, under this title, both generic and specific names are given, whereas only generic names are given for other snakes. The heading "Pit Vipers," and the accompanying paragraph on page 19, would be better placed on page 20, where pit vipers are described. The generic name for humped-nose pit vipers is given with the American spelling, and although this is widely accepted, the classical spelling *Ancistrodon* is preferable.

More stress could have been laid on eye size and pupil shape; in the otherwise clear diagrams, it is not possible to distinguish between the vertically ovoid pupils of the Russell's viper and the round pupils of the cobra.

Some of the information on points of detail is misleading. For instance, it is stated that in *Trimeresurus* the body scales have "longitudinal keels, thereby producing a file-like surface to the back." Since such keeling is common to other genera described in the book, it is a pity that emphasis should have been laid on it in this genus, in so many of the species of which keeling may be almost completely absent and the scales may be practically smooth. Keeling of scales is also described as a characteristic of *Oxyuranus*, although in Kinghorn's original description, the scales are described as smooth, the comment being

added, " a few of the central rows of the dorsal scales appear to bear obtuse keels, but . . . tells me that he is almost certain the scales were smooth in the living snake."

Some of the anatomical descriptions of other snakes are not quite accurate, which is unfortunate since, in most cases, such information as is given is not essential for the rough identification of genera for which the pamphlet was prepared (see, for example, the description of the subcaudal scales, in kraits and the cobras, etc.).

In the description of the *Demansia* genus, the statement that the anal shield is paired is not strictly correct, since in *D. ornaticeps* (Port Darwin) the anal shield is entire. *B. G. Maegraith.*

MAEGRAITH, B. G. **The Identification of the Poisonous Snakes of British West Africa. II.—Details of Genera and Species.** *Ann. Trop. Med. & Parasit.* 1944, Sept. 30, v. 38, No. 2, 119–38.

Part I of this excellent work has been referred to in this *Bulletin* [1944, v. 41, 604]. This second part gives details of 37 species of Colubridae belonging to three genera of Elapinae, six genera of Viperinae of the Proteroglypha, and 14 genera of Dipsadomorphinae (Opisthoglypha). Under each genus is given briefly the species, the common names and notes covering the salient characters of all and their venom. Each species is considered and described systematically —the head, the teeth, the eyes, the head-shields and the body-scales. When the whole work is completed permission should be obtained to have it issued as a separate publication, so that all those interested in or concerned with the identification of snakes of West Africa may have it at hand and not have to turn up bound volumes of the *Annals* for the information required.

H. Harold Scott.

PUROHIT, G. R. *Echis carinata* **Poisoning.** *Indian Med. Gaz.* 1944, June, v. 79, No. 6, 266–8.

The venom of *Echis carinata* contains an anticlotting ferment, an haemolysin and a potent haemorrhagin ; hence the effects of a bite by this snake are haemorrhages which may occur anywhere—from the gums, as subcutaneous extravasations, from the urinary or intestinal tract, etc. Locally, there is severe burning pain, swelling, and bleeding from the punctures for a long time, and later sloughing of tissues. Local treatment is not, as a rule, very effectual, for the patient usually applies it after several hours and in many cases has assisted absorption by running a distance to obtain aid. Specific treatment by *intravenous* injection of 10 cc. of concentrated antivenene should be given as early as possible [but the author does not seem to place much confidence in this]. Beneficial treatment is mainly symptomatic, comprising cardiac stimulants, vasoconstrictors (adrenaline, pitruitrin) and calcium to hasten coagulation and repair of the vessel wall. The author, finding it difficult to procure haemostatics locally, tried intramuscular injection of 2–3 cc. human serum and reports two cases in which the oozing of blood which had persisted for three to four days, ceased within 24 hours of injection of the serum. [In a third case, apparently more severe than the other two, the bleeding from gums, urethra and bowel, ceased spontaneously after three days, a fact which detracts somewhat from the value of the two reported cases as to the efficacy of the serum. Further trial is needed.] *H. Harold Scott.*

EARLE, K. V. **Snake Bite in Northern Peru.** *J. Trop. Med. & Hyg.* 1944, Aug.–Sept., v. 47, No. 4, 37–40, 3 charts.

Reptiles are common in Northern Peru in the desert area of Talara-Negritos ; nevertheless cases of snake-bite are few. During 1943, the author, who is

Medical Director of the International Petroleum Company and was formerly Chief Medical Officer of the Negritos Hospital, Peru, saw only three cases, all bites by the *machancha*, or *Trimeresurus barnetti*, a variety of *fer-de-lance*. The symptoms in the three cases described do not seem to have been very severe; they comprised a certain degree of shock, local pain and oedema extending for some distance up the limb, some albuminuria (not great) and, in one patient, haemorrhage from the oral mucosa about 15 hours after the bite.

Antivenene was injected intravenously in one, intramuscularly in two (one of these had received the intravenous dose); in the third the route of administration is not mentioned. Recovery in each case was rapid; two left the hospital in three days, the third was much better in three days and left hospital on the sixth day.

Another poisonous snake in Peru is the "coral snake," *Micrurus tschudii olssoni*; others, *e.g.*, *Constrictor constrictor ortonii*, are of the *Boidae* and are not poisonous, though dreaded by the inhabitants. *H. Harold Scott.*

SAMPAYO, R. R. L. **Pharmacological Action of the Venom of** *Latrodectus mactans* **and other Latrodectus Spiders.** *J. Pharm. & Exper. Therap.* 1944, Apr., v. 80, No. 4, 300–322, 7 figs. [13 refs.]

An interesting study on the mode of action of the venom of *Latrodectus mactans*, the Black Widow spider. Poisoning by the bite of one or other of the eight known species of *Latrodectus* is frequently met with in North and South America, in Italy, Spain and Russia, in South Africa and Madagascar. Before detailing his studies of the venom the author describes the symptoms caused by the bite. These are familiar to readers of this *Bulletin* [see especially 1936, v. 33, 401]. He then refers to an antivenene prepared from horses by injection of triturated cephalothoraces in saline and its beneficial results when injected subcutaneously in a dose of 10 cc.

The action of the venom is then considered and from his work the author has noted: (1) *The action on the Motor System.*—Initial tremor, then muscular contractions and stiffness of the muscles of the abdominal wall (in guineapigs and dogs), but not in denervated muscles. The action is not direct but *via* the central nervous system. (2) *On the Vascular System.*—Intravenously injected the venom raises arterial pressure by generalized vasoconstriction. It has no effect on adrenaline secretion. There is always a latent period between injection of the venom and the onset of symptoms, as though there was a slow central nervous penetration or some chemical transformation. The hypertension produced is probably of central origin, but a fresh venom, though highly toxic, may have little hypertensive power. Rise of blood pressure occurs after injection of the venom even in decapitated animals and after extirpation of the carotid sinus and section of both vagi, indicative of direct action on the spinal cord. The hypertension is not prevented by atropine, it is reinforced by cocaine. The venom has no effect on involuntary muscle, bronchioles, intestine, uterus, but, by thoracic and abdominal muscular spasm, causes irregular breathing and periods of apnoea. *H. Harold Scott.*

GHOSH, T. K. **Cobra Venom Therapy of Pain of Malignant Disease with special reference to Carcinoma of the Cervix.** *Calcutta Med. J.* 1944, June, v. 41, No. 6, 185–90.

DERMATOLOGY AND FUNGOUS DISEASES.

FLECKER, H. & MCSWEENY, A. **Irritation produced by the Procession Caterpillar** (*Ochrogaster contraria*). *Med. J. Australia.* 1944, Aug. 5, v. 2, No. 6, 137–8.

The procession caterpillar—so called because they follow one another in numbers across tracks at night—the larva of a moth, *Ochrogaster contraria*, forms nests in bags of fifty and more in trees. If these nests fall and the caterpillars alight on anyone beneath, the hairs set up an irritative dermatitis—a diffuse erythema with intense itching, or a patchy urticaria—wherever they come in contact with the skin. Three cases are recorded, in soldiers occupying a tent beneath a tree in which such a nest was present. Fomentations with 1 per cent. Dettol, followed by calamine lotion in half an hour brought speedy relief. If the urticaria was severe 10 minims of 1 : 1000 adrenaline were injected subcutaneously twice a day for two days. [See also this *Bulletin*, 1927, v. 24, 400.] *H. Harold Scott.*

MENDELSOHN, H. V. **Dermatitis from Lemon Grass Oil** (*Cymbopogon citratus* or *Andropogon citratus*). *Arch. Dermat. & Syph.* 1944, July, v. 50, No. 1, 34–5.

Among the many known causes of dermatitis venenata mentioned in standard works—those of J. C. WHITE, L. F. WEBER, V. PARDO-CASTELLO, and R. PROSSER-WHITE, for instance—lemon grass oil, the oil distilled from *Cymbopogon citratus*, receives no mention. It has an odour like that of verbena, contains 70 per cent. or more of aldehydes, the chief of which is citral, and is used for making perfumes. The plant is indigenous to East India.

The author had under his observation eight men who suffered from erythemato-squamous and vesicular dermatitis after working on a boat which had recently come from India with a cargo of lemon grass oil. It affected the face, forearms, ankles and eyelids. A sample of the oil itself was not obtainable but reactions resulted from the application of pinewood contaminated with the oil. It seems to be not only a direct irritant, but also to act as a sensitizer, for an incubation period of 6 to 18 days may elapse before symptoms arise. It may be noted that citronella oil—widely used as an insect repellent—is obtained from another species of *Cymbopogon*, namely *C. nardus*. *H. Harold Scott.*

EPHRAIM, H. **Triple Symptom Complex of Behcet. Report of a Case.** *Arch. Dermat. & Syph.* 1944, July, v. 50, No. 1, 37–8.

MICHAEL, P., MCLAUGHLIN, R. F. & CENAC, P. L. **Coccidioidomycosis. Report of Unsuccessful Treatment with Penicillin.** *U.S. Nav. Med. Bull.* 1944, July, v. 43, No. 1, 122–4.

Although previous experiments *in vitro* and isolated tests of the therapeutic use of penicillin in the treatment of coccidioidomycosis gave no evidence of its effectiveness in the treatment of this disease, the authors decided to try the effect of unusually large doses of the drug on a case under their care. The disease was, apparently, of some duration and the clinical features pointed mainly to internal hydrocephalus, but the diagnosis of coccidioidomycosis was made only after the appearance of two superficial abscesses on the chest wall, from which *Coccidioides immitis* was isolated. The fungus was, later, also cultivated from the cerebrospinal fluid. After the diagnosis, penicillin treatment was administered and a total amount of 3,081,000 Florey units was given ; 500,000 units intrathecally and the remainder intravenously. The

drug had no noticed effect on the course of the disease, and death occurred four months after symptoms had first been observed. A post-mortem examination revealed extensive generalized disease affecting most of the organs. The base of the brain was covered by a tenacious fibrinopurulent exudate and there was marked internal hydrocephalus with dilatation of the ventricles and oedema of the choroid plexus. *J. T. Duncan.*

MONTPELLIER, J. & CATANEI, A. Nouveau cas de dermatite verruqueuse mycosique observé en Algérie. [**A New Case of Cutaneous Mycosis seen in Algeria.**] *Arch. Inst. Pasteur d'Algérie.* 1944, Mar., v. 22, No. 1, 13–15.

The authors give a brief account of their examination of a piece of morbid tissue removed at biopsy from a case of chromoblastomycosis which occurred at Constantine, in Algeria. The causative fungus was isolated in culture and identified as *Phialophora verrucosa.* An earlier Algerian case of this disease, reported by the same authors in 1926, was caused by *Hormodendron algeriense* n. sp. *J. T. Duncan.*

SAYER, A. **Blastomycosis of the Skin (Gilchrist Type) with associated Blastomycetic Pulmonary Disease. Report of a Case.** *U.S. Nav. Med. Bull.* 1944, Aug., v. 43, No. 2, 333–42, 5 figs. [10 refs.]

MISCELLANEOUS DISEASES.

FERRO-LUZZI, G. Altitudine e malattie dell' apparato circolatorio. (Ricerche cliniche e sperimentali.) [**Altitude and Heart Disease : Clinical and Experimental Research.**] *Boll. Soc. Ital. di Med. e Igiene Trop.* (Sez. Eritrea). 1944, v. 3, No. 1, 9–88, 7 figs. on 6 pls. English summary 87–8.

" The author studied during 5 years the clinical aspects, the course and the prognosis of the diseases of the cardiovascular system. The investigation was performed on 871 Europeans, living in the Eritrean highland (2,400 m.). The first part of the work deals with the phenomena induced by altitude on the circulatory system in healthy subjects. Such phenomena are demonstrated to be of two kinds : mechanical and metabolic. The first produce a decrease of blood volume accompanied by a corresponding contraction in diameter of peripheral vessels, without increase of heart activity. The second causes an increase in the metabolic rate of the tissues and a condition of ' compensated gaseous alkalosis ' with a decrease in alkali reserve.

" As the author points out, the above mentioned phenomena act harmfully and simultaneously on the oxygen balance in the tissues, altering the nutritional quotient between supply and demand and thus giving rise to a chronic malnutrition of the tissues, which sometimes becomes evident in the myocardium as well.

" In the second part of the paper the author examines the principal diseases of the cardiovascular system, with special reference to the influence of them on altitude. The following diseases have been studied: chronic valvular diseases, apparent primary myocarditis, secondary myocarditis hypertension, aortitis, anginal syndrome, disturbances of heart rhythm, ' circulatory baropathies,' sepsis with carditis. In all these diseases the author has investigated particularly the myocardial damage, both clinically and by means of electrocardiography, teleradiography and arterial and venous pressures. The results obtained in these investigations revealed that, though the altitude

does not bring about, in the above mentioned diseases, a more frequent or more severe myocardial damage than in Europe, the damage shows, more frequently than elsewhere, an evident coronary type—a phenomenon, which constitutes, according to the author, the most striking feature of cardiopathies evolving in altitude.

"The author also calls attention to a syndrome observed by him in the Eritrean highlands and which he presents and describes proposing to describe it with the term 'circulatory baropathy.' This is represented by a functional disease of the circulatory system, which the author assumes to have for its basis an insufficient adaptation to the biological conditions imposed by altitude.

"The third part of the work deals with the principal metabolic changes induced by altitude in patients with cardiopathies (basal metabolism, acid-base balance, haemochemical values and so on). As to basal metabolism, a considerable increase is noted. With regard to the acid-basic balance the author finds almost constantly a situation of 'compensated non gaseous acidosis' which leads to a further decrease of alkali reserve. The haemochemical values of blood have been generally found within normal limits. The author discusses as well the value of vitamins A, B, C, in relation to cardiopathies.

"Concerning heart failure the author calls attention to 2 principal facts: (1) heart failure does not occur very frequently in highlands.

"(2) Once the heart failure develops, it is always more severe than in Europe.

"The author suggests that there is good reason to assume that both these observations represent a sequence to the damage induced by altitude on the peripheral vascular system. This peripheral damage is 'perpetuated' by the interference of metabolic changes and it deprives the circulatory system of one of its principal functional reserves. A further reason of such abnormal behaviour of heart failure has to be investigated in the coronary feature of the myocardial damage. Furthermore, the author discusses the practical value of statistical data of mortality from cardiopathies in Europeans living in Eritrea, and examines the prognosis of heart disease in this country. He points out that, whilst the mortality from heart failure is not high, that from anginal syndromes is remarkable. The author thinks that such peculiar behaviour is a consequence of the peripheral circulatory system's reaction to altitude.

"Finally, in the last part of the work, the author discusses the treatment of heart diseases, with or without heart-failure, in the highlands.

"Experiments as to the favourable influence of thyroidectomy in heart disease at this altitude, have been carried out, but the number of patients so treated is not sufficiently large, at present, to permit a report."

FLECKER, H. **Sudden Blindness after Eating "Finger Cherries"** (*Rhodomyrtus macrocarpa*). *Med. J. Australia.* 1944, Aug. 19, v. 2, No. 8, 183–5, 1 fig.

This is a most interesting contribution. Brief records are given of children suddenly becoming blind some 24 hours after eating "finger cherries," the fruit of *Rhodomyrtus macrocarpa*, a plant growing in North Queensland. Some of the cases recorded are of patients attacked 33 to 51 years before and none later than 14 years ago, so the histories may not be accurate in detail, but the general history was of eating the fruit, in some instances unripe, in others overripe, and suddenly, 24 hours or a little less afterwards, becoming blind and in nearly all cases remaining permanently so. Ophthalmoscopically, optic atrophy was found. [No other symptoms are mentioned and it is certainly strange for a poison to have so limited and specific an action.] Some authorities maintain that the toxic element is a sapotoxin in the fruit, others

that it is due to a fungus, *Gloeosporium periculosum*, which grows on the fruit. A goat fed on the fruit and a calf which browsed on the leaves both became blind. [This fascinating question should certainly not be allowed to rest here. Investigation should not be difficult since animals are known to suffer in the same way (or apparently the same way) as human beings.] *H. Harold Scott.*

ALLEN, A. S. **Pa Ping, or Kiating Paralysis.** *Chinese Med. J.* 1943, Oct.–Dec., v. 61, No. 4, 296–301.

Pa Ping is a better name than Kiating paralysis for this peculiar condition, just as Mediterranean fever was better than Malta fever before the actual cause was determined, for the giving of a limited local name may give a false impression of the area of prevalence of a disease. So now, this disease is by no means limited to the Kiating district. Cases have been reported also from Wutungchiao, Omei, Chengtu, Ipin, Luhsien and elsewhere.

The author saw his first case in 1930 and later was himself attacked, and since 1932 cases have been met with increasing frequency and he has now seen more than 200 cases. The symptoms are briefly these: Within a few hours of a meal there is a feeling of malaise and nausea and then, almost sudden in onset, there is a numbness and tingling of fingers and toes, and, in severe cases, paralysis of arms and legs, and the patient is unable to draw up the knees, lift the arms or rise from his bed; tactile sense is not affected nor are the sphincters involved. In mild cases these symptoms pass off in a few (four or five) hours, but in severe cases respiration becomes laboured, saliva drools from the mouth, cyanosis develops and death occurs in 48 hours or less, from cardiac and respiratory paralysis. Laboratory investigations give no clue. The fatality rate is 5–10 per cent.

Investigation has revealed that patients have increased in number since there has been increased activity in the salt-producing area of China and the table salt in use in the areas where the disease occurs has been found to contain at times as much as 25 per cent. of barium chloride. The author offers the surmise that the recent increase in prevalence is due either to change in the method of preparing the salt by which the barium which was formerly precipitated is now left in, or to the tapping of a new well with high barium content. Treatment consists in early administration of sodium or magnesium sulphate to precipitate the barium as insoluble sulphate. Absorption of the chloride is rapid and the antidote should be given early.

[Experimental work recorded by KU, YEN & LI in another contribution to this same issue of the *Chinese Medical Journal* shows that similar symptoms result from feeding animals (they used dogs and rabbits) with common salt containing barium chloride.] [See also the paper by KEH-WEI HUANG below.]

H. Harold Scott.

KEH-WEI HUANG. **Pa Ping (Transient Paralysis simulating Family Periodic Paralysis).** *Chinese Med. J.* 1943, Oct.–Dec., v. 61, No. 4, 305–12.

This is a record of twelve cases of Pa Ping, a disease characterized by transient paralysis of the limbs. Their ages ranged between 20 and 50 years; their occupations were very varied, among them drivers, merchants, carpenter, student and lawyer. All told of symptoms appearing soon after and related to a meal. One patient had had "repeated attacks in the last six years," another had three within six weeks. Before the onset of paralysis there were usually prodromata such as aching of muscles, uneasiness in movement, pain in arms and legs, malaise, nausea, perhaps vomiting, and diarrhoea. The paralysis would be present on waking during the night, or in the early morning.

It is of a flaccid type and there is no sensory disturbance. Recovery was complete in all the twelve patients ; in four of them within 24 hours, and in none later than three days. The author speaks highly of the beneficial results following intravenous injection of 5 per cent. potassium citrate, saying that "rapid and complete recovery took place immediately after the injections" [but where spontaneous recovery may be so rapid it is difficult to prove that the happy issue out of all their afflictions was *propter* and not merely *post injectiones*].

As regards the cause the author states "Chemical poisoning is suggested to be the possible cause" and "probably associated with the use of salt" because the disease is limited to certain parts of Szechuen, salt-producing areas.

H. Harold Scott.

CHOU, C. & CHIN, Y. C. **The Absorption, Fate and Concentration in Serum of Barium in Acute Experimental Poisoning.** *Chinese Med. J.* 1943, Oct.–Dec., v. 61, No. 4, 313–22, 3 figs. [20 refs.]

This study was instigated by the belief that the disease reported as Pa Ping in Szechuen was due to poisoning by barium chloride taken in table-salt. The authors carried out experimental work to test the effects of administering barium chloride to animals, mostly dogs, by various routes—gastric tube, intraperitoneal, intravenous, intramuscular and intracisternal injection. This is, therefore, a pharmacological study ; the interesting aspect from the point of Pa Ping is the gastro-intestinal work. If the nature of the food was such as to precipitate the barium as sulphate, absorption was little and slow ; otherwise, it was rapid and could soon be detected in the serum and reached its peak there in an hour or less and would persist at a lower level for several hours. Its early reduction in amount in the blood would leave a residue too small to cause toxic symptoms. Symptoms of acute poisoning when the barium was given by mouth were salivation, vomiting, diarrhoea and tenesmus ; cardio-respiratory symptoms were not marked, but neuro-muscular disturbance took the form of twitchings and tremors in isolated groups of muscles of extremities or trunk ; then motor weakness of skeletal muscles first, followed by paralysis of the muscles of the legs, then the trunk, then the arms. Thus the whole body might become paralysed but sensation was not lost. Barium was observed to be absorbed from the intestine, not the stomach. Naturally, if the barium was injected intravenously toxic cardiac effects were prominent—extra-systoles, arrhythmia, tachycardia succeeded by bradycardia. It was rapidly removed from the blood-stream, half of it within half-an-hour and 75 per cent. in two hours.

H. Harold Scott.

STONE, P. H. **Three Rather Unusual Cases.** *E. African Med. J.* 1944, Aug., v. 21, No. 8, 239–41.

Three cases of rare pathological conditions in African natives are described :

Case 1. A male of the Jaluo tribe, aged about 30, was admitted to hospital in a semi-comatose state with marked retraction of the head and Kernig's sign strongly positive. His temperature was 102·8°F. but had been 103°–104°F. during the preceding three days ; his pulse was 88. Lumbar puncture showed the cerebrospinal fluid to be under increased pressure, but it was clear. Malarial parasites were present in the blood. His illness was diagnosed as cerebral malaria and was treated accordingly. During the following week his temperature remained high but his cerebral symptoms improved. On the eighth day after admission typical mumps developed ; the cerebral symptoms are considered to have been caused by mumps, the presence of malarial parasites being merely incidental.

Case 2. A native of Uganda, aged about 17, was admitted to hospital in January 1944 with his left leg, below the knee, and foot greatly swollen and tender; his temperature was 102°F. There was no history of injury but the lame leg, in the lower part, and foot had been swollen on four occasions during the preceding three months and on two of these small abscesses had been opened. His leg was incised and explored but no pus was found. He was given proseptasine [benzylsulphanilamide] and leg-baths and his temperature subsided and the swelling decreased. On February 3rd, gangrene developed extending from the toes to the mid-tarsal level and the leg became swollen and oedematous while his general condition was "very toxic." The leg was amputated through the middle of the thigh and recovery was uneventful. No cause for the condition was discovered.

Case 3. This was a case of typical appendicitis, generally regarded as rare in the African native. An editorial note states that 26 cases of appendicitis were operated upon in the Nairobi Native Hospital during 1943. *J. F. Corson.*

GENERAL PROTOZOOLOGY AND PROTOZOAL DISEASES.

ZUELZER, W. W. **Infantile Toxoplasmosis. With a Report of Three New Cases, including Two in which the Patients were identical Twins.** *Arch. Pathology.* 1944, July, v. 38, No. 1, 1–19, 3 figs. [24 refs.]

The author gives an account of three cases of infantile toxoplasmosis, two of them in identical twins born of negro parents and the other in a white child. The cases of the twins, one of which died at the age of one month, the other still surviving at seven months, were instances of intra-uterine infection. The case in the white child terminated fatally at the age of 11 days. It is regarded as an instance of infection soon after birth. This is borne out by the character of the infection which was generalized throughout the body, resembling acute infections in adults, and by the fact that on two occasions the maternal blood failed to reveal protective antibodies when tested by Sabin's protection test in rabbits. In the twin that died the toxoplasms were much less numerous than in the acute case and the character of the lesions appeared to indicate that the acute phase of the disease had been passed *in utero*. The disease in the twins was in the chronic phase and was almost asymptomatic and, had it not been for the post-mortem diagnosis in the twin that died on the 11th day following its birth, toxoplasmosis would not have been suspected in the surviving twin. In fact nystagmus at the seventh month was the first symptom to be noted. Blood taken from the mother of the twins was strongly protective in Sabin's test, a further indication that infection of the twins had occurred before birth. In the case in the white child the main clinical features were convulsions, opisthotonus, instability of regulation of body heat and disturbances of respiration. The changes in the spinal fluid—xanthochromia, mild pleocytosis and increased protein content—were similar to those reported from other cases of early infantile toxoplasmosis. The absence of hydrocephalus and calcification in the brain lesions can be accounted for by the short duration of the acute infection. Some degree of icterus was noted in the twins, while extramedullary haemopoiesis was demonstrated in the tissues of the two fatal cases. It is considered that there is insufficient evidence to indicate that these two features are characteristic of toxoplasmosis.

The paper describes the three cases in considerable detail from the clinical and the pathological points of view and reviews much of the earlier literature on

infantile toxoplasmosis. It is undoubtedly a valuable contribution to knowledge of this relatively new disease, of which barely three dozen cases have been placed on record. *C. M. Wenyon.*

FEO, L. G. **The Incidence and Significance of *Trichomonas vaginalis* Infestation in the Male.** *Amer. J. Trop. Med.* 1944, May, v. 24, No. 3, 195–8.

At the Station Hospital at Fort George G. Meade, Maryland, over a period of seven months, the early morning urethral discharge of 926 men who had been admitted for urethritis was examined for trichomonas. Of these men 735 were negroes and 191 were white. The 735 negroes gave 407 positive for the gonococcus and 121 positive for trichomonas. Only 18 were positive for both organisms, while 189 showed neither. When the trichomonas-positive cases were grouped with the 189 non-specific ones it was revealed that 39 per cent. of the gonococcus-free subjects harboured trichomonas. Of the 191 white men 110 were positive for the gonococcus and 23 for trichomonas. Of the gonococcus-free men 28·7 per cent. were positive for trichomonas. It is noteworthy that the trichomonas subjects usually presented no symptoms, the only complaint being a slight watery discharge. Of the total of 144 cases, 24 repeatedly revealed trichomonas over an observation period of one month. The discharge in these cases was of a dirty white or muco-purulent type. In stained smears of the discharge it was noted that the bacterial flora was similar to that seen in trichomonas vaginitis. In view of the fact that it has been established that *Trichomonas vaginalis* is easily implanted into the negative vagina it seems clear that the male is the important transmitter of the infection.

C. M. Wenyon.

GENERAL ENTOMOLOGY.

BATES, M. **Notes on the Construction and Use of Stable Traps for Mosquito Studies.** *J. Nat. Malaria Soc.* Tallahassee, Fla. 1944, June, v. 3, No. 2, 135–45, 3 figs.

When attempting to trap mosquitoes in the Egyptian Delta the author found that a large proportion of the mosquitoes entering the traps subsequently escaped through the vertically arranged baffle. He describes here the modifications introduced to overcome this. The ingress baffles were arranged in the horizontal plane so that the mosquitoes would have to fly downwards to escape. The trap was still more effective in the retention of mosquitoes if the edges of the baffle were of taut wire netting instead of wooden supports, which served to make the opening more conspicuous. The traps were 2 m. long, 1 m. wide and 1·75 m. high, so that they could hold a donkey or a man lying in a cot. The lower part of the trap on all sides was of wood, plywood, or galvanized iron ; the upper part screened with metal gauze. It is useful to place the trap on a cement platform surrounded by a shallow moat containing water to prevent the entrance of ants. Some results obtained in Egypt and in Colombia are given which illustrate how such traps can be used to measure preferences for different hosts and seasonal changes in abundance. *V. B. Wigglesworth.*

CORRÊA, R. R. & CERQUEIRA, F. M. C. Descrição de *Anopheles* (*Kerteszia*) *laneanus*, nova espécie de anofelino de Campos do Jordão (*Diptera, Culicidae*). [**A Description of *A. laneanus*, New Species.**] *Arquivos de Hig. e Saúde Pública.* 1944, Jan,, v. 9, No. 20, 111–17, 7 figs. English summary p. 115.

KNIPLING, E. F., GJULLIN, C. M. & YATES, W. W. **A New Oil-Emulsion Mosquito Larvicide.** *U.S. Dept. Agric., Bur. Ent. Plant Quarantine* E-587. 1943, 4 pp. [Summary taken from *Dept. Scient. & Indust. Res. Water Pollution Research. Summary of Current Literature.* 1943, Aug., v. 16, No. 8, 231, Abstr. 922.]

The authors describe extensive field tests on the effectiveness of an oil-emulsion larvicide against mosquito larvae in irrigated regions, in overflow swales along the Columbia River, in semi-permanent ponds and roadside ditches, and in mountain meadows. 90–100 per cent. mortality was caused in 24 hours when a mixture containing 1 part of Diesel oil with 4 per cent. emulsifier and 6–9 parts of water was applied as a spray at a rate of 4 gal. per acre. The emulsifier consisted of sulphated sperm oil (Nopco 1216) or a phthalic glyceryl alkyd resin (B-1956), or a complex amine with a chain of 18 carbon atoms (Amine 230 X).

WILSON, C. S., MATHIESON, D. R. & JACHOWSKI, L. A. **Ingested Thiamin Chloride as a Mosquito Repellent.** *Science.* 1944, Aug. 18, 147.

As thiamin chloride had been reported (SHANNON, *Minnesota Med.*, 1943, v. 26, 799) to relieve the itching of mosquito bites and to prevent further biting, the authors made experiments to test these statements. The doses of thiamin chloride taken by the volunteers varied in different experiments: 505 mgm. were taken in three days; 100 mgm. were taken and then the volunteer exercised to produce sweating, one arm being covered with "indalone" [n-butyl mesityl oxide oxalate] as a control; three persons took 30 mgm. four times a day for three days. Tests were made with *Aëdes aegypti* in all the experiments but no repellent action was found. Subsequent tests by the U.S. Department of Agriculture and by the National Institute of Health have confirmed these results. *J. F. Corson.*

MADDEN, A. H., LINDQUIST, A. W. & KNIPLING, E. F. **Tests of Repellents against Chiggers.** *J. Econom. Entom.* 1944, Apr., v. 37, No. 2, 283–6.

Tests on a series of repellents were made under field conditions against chiggers [that is, mites of the genus *Trombicula* and its allies, known variously as "harvest bugs," "bête rouge," "itch mites," etc.] Such repellents proved more effective and lasting when applied to the clothing than to the skin. The most practical means of treating the clothing is to apply the liquid repellent from a narrow-mouthed bottle in a half-inch band around the inside of the waist, the fly, and the bottoms of the legs of the trousers, the cuffs, fly and neck of the shirt, and in a wide band around the upper part of the socks. The most successful materials were the proprietary repellents "Indalone" (n-butyl mesityl oxide oxalate) and "Rutgers 612" (2-ethylhexane diol-1, 3) and dimethyl phthalate. These gave good protection up to 30 days after treatment. For cheapness, availability and desirability for use the authors recommend dimethyl phthalate [a colourless and almost odourless oily liquid].

V. B. Wigglesworth.

CARTER, H. F. WEDD, G. & D'ABRERA, V. St. E. **The Occurrence of Mites (Acarina) in Human Sputum and their possible Significance.** *Indian Med. Gaz.* 1944, Apr., v. 79, No. 4, 163–8. [13 refs.]

The occurrence of mites in the sputum of 17 out of 28 persons suffering from respiratory disorders (including asthma and chronic bronchitis) is recorded. The observations were made in Ceylon where most of the subjects had resided for a few months only. The mites were of at least ten species; those identified were the common species present in stored products and debris of various kinds,

such as species of *Tyroglyphus*, *Carpoglyphus*, *Glyciphagus*, *Cheyletus* and *Tarsonemus*. Such mites were common in the hospital wards and in some cases were proved to be air-borne, but elaborate precautions were taken to exclude the possibility of accidental contamination of the sputum, and washings from the nose and mouth proved negative. The authors therefore conclude that the mites did actually come from the lungs and bronchi ; in one case at least there was evidence that the mites had adapted themselves to the conditions there and were breeding. They believe that the chief method of infection is by inhalation, and that infestation may have been of prolonged duration in some cases. They put forward the view that the condition variously known as "pseudo-tuberculosis," "eosinophil lung," "tropical eosinophilia," etc., may, in part at least, be due to mite infestation of the respiratory system. The numbers of mites present were diminished, and the pulmonary symptoms were improved, after treatment with organic arsenicals. In three of the mite-infested patients there was a high degree of eosinophilia, which was reduced after treatment with arsenic. [An analogous condition occurs in monkeys and is (at all events, was) far from uncommon in autopsies on Rhesus monkeys at the Zoological Gardens, London.] *V. B. Wigglesworth.*

PACKCHANIAN, A. **An Apparatus to facilitate the Feeding of Insects on Laboratory Animals.** *Amer. J. Trop. Med.* 1944, July, v. 24, No. 4, 273–5, 4 figs.

LABORATORY PROCEDURES.

STEINER, G. & STEINER, Grete. **New Simple Silver Stain for Demonstration of Bacteria, Spirochetes, and Fungi in Sections from Paraffin-Embedded Tissue Blocks.** *J. Lab. & Clin. Med.* 1944, Aug., v. 29, No. 8, 868–71.

For success with the method described tissues are fixed in formalin ; Zenker fixation cannot be used nor can celloidin films. The authors have used their method for the past three years and have found it perfectly satisfactory. The details of the staining process are : The sections, 6–7μ thick, after removal of the paraffin in the usual way, are placed in 1 per cent. uranium nitrate for three minutes, then washed twice in distilled water, after which they are immersed in 1 per cent. aqueous silver nitrate and kept for two hours at 56–58° in the oven, and again thoroughly washed in distilled water. Next, after dehydration in graded alcohols the sections are placed for five minutes in 2·5 per cent. gum mastic in absolute alcohol. Without washing, they are transferred directly to hydroquinone for reduction till the colour of the sections becomes a light brown (usually 12–15 minutes) ; they are then washed three times in distilled water, and dehydrated, cleared and mounted.

To obtain satisfactory results certain precautions are necessary. The reducing solution consists of 1 gm. hydroquinone dissolved in 60 cc. distilled water ; to this are added 20 cc. of the 2·5 per cent. gum mastic in absolute alcohol and 20 cc. of silver nitrate sodium potassium tartrate solution. Details for preparing the last are given as follows :—

Two gm. of silver nitrate are dissolved in 1,000 cc. of boiling distilled water. When the chemical is dissolved and the water is boiling, 1·65 gm. of powdered sodium potassium tartrate is quickly added until the white precipitate changes to grey. Then the solution is filtered while hot into an amber bottle with glass stopper. The silver nitrate sodium potassium tartrate solution is poured into the alcoholic cum mastic solution and not *vice versa* ; equal parts, 20 cc. each, of silver nitrate sodium potassium tartrate solution and of 2·5 per cent. alcoholic gum mastic solution are used.

The hydroquinone solution must be freshly prepared each time ; the other solutions keep indefinitely as stock.

All glassware must be rinsed in distilled water before use and the dish for the gum mastic solution rinsed with absolute alcohol. The total time taken is under 2½ hours, during two hours of which the slides are in the oven and the technician can get on with other work.

Bacteria, spirochaetes and fungi present a black mirror-like apearance, showing up on the yellow or brown tissue elements. It is claimed that there is no precipitation of metallic silver and that the sections do not show artefacts.

H. Harold Scott.

REPORTS, SURVEYS AND MISCELLANEOUS PAPERS.

SERGENT, Ed. Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1943. [**Report on the Pasteur Institute, Algeria, for 1943.**] *Arch. Inst. Pasteur d'Algérie.* 1944, Mar., v. 22, No. 1, 63–99. [24 refs.]

LEDENT, H. La dépopulation chez les Nkundo. [**Depopulation in the Nkundo Tribe.**] *Rec. Travaux Sci. Méd. Congo Belge.* Léopoldville. 1944, Jan., No. 2, 130–40.

Investigations were made to find the cause of the relatively small number of children in the population of two areas, 45 and 67 kilometres respectively from Coquilhatville in the Belgian Congo. One of the areas, Indjolo, had a population of 1,340 of the Nkundo tribe, living in 10 villages, and 348 pigmies in three villages ; the other area, Bofidji-Est, had 1,602 Nkundos in 19 villages and 74 pigmies in two villages. In Indjolo the ratio of Nkundo children to adult females was 0·36 to 1, the figure for the pigmies being 1·5 to 1 ; in Bofidji-Est the respective figures were 0·46 and 1·32. Diseases to be considered as possible causes of the low fertility among the Nkundos were gonorrhoea, syphilis, trypanosomiasis, yaws and leprosy. An examination of adult males showed that gonorrhoea could be excluded as a cause. The tests for syphilis included the Wassermann, Meinicke and Kahn reactions for both blood serum and cerebrospinal fluid, and the latter was also examined by the Weichrodt and Pandy tests and by cell count and total protein estimations. Evidence of syphilis was found in 60 per cent. of the Nkundo and nearly one-third of these showed signs of neurosyphilis. In trypanosomiasis the cell count of the cerebrospinal fluid is frequently high, over 50 cells per cmm. and is closely associated with increased total protein content ; in the present cases the cell count was usually below 50 and the number of persons with altered cerebrospinal fluid was 3 to 10 times the number of persons suffering from trypanosomiasis. An excess of total protein was more frequently found than an excess of cells, *i.e.* there was a dissociation between increased cell count and increased protein. It was considered that yaws and leprosy could be dismissed as causes of infertility. The author concludes that old standing latent syphilis was responsible for the small proportion of children in the Nkundo tribe. The pigmies also showed evidence of a high incidence of syphilis yet the proportion of children among them was much greater ; this is attributed to their stricter sexual life compared with the promiscuous habits of the Nkundo, the effect being that the non-syphilitic pigmies maintain the numbers of the population. *J. F. Corson.*

BAKER, D. H. Etude concernant la situation sanitaire et démographique de quelques villages du district de la Tshuapa (pathologie—dénatalité). [**The Population and Health of some Villages of the District of Tshuapa.**] *Rec. Travaux Sci. Méd. Congo Belge.* Léopoldville. 1944, Jan., No. 2, 141–50.

Attention having been drawn lately to the low birth-rate among the natives of the Tshuapa district, the author made investigations in some villages around Mondombe in the Ikela area [about the centre of the Belgian Congo]. The three races examined were the Bombole who are fishermen, the Topoke who are hunters, and the Lolia-Ngolu, neither hunters nor farmers.

The total number of persons—men, women and children—examined was 4,306 ; the height, weight and the girth of the chest were measured and records made of the ages, outside occupations and diseases and deformities. Hernia, gonorrhoea, syphilis and yaws were the chief diseases and defects observed ; it is estimated that about 2 per cent. of the population are infected with syphilis every year, except the Topoke race where the incidence of syphilis is very low, but that of yaws is very high, affecting about 50 per cent. of the population. The number of children is relatively small and this is due to the large proportion of sterile marriages, the young adults being the least fertile. These numbers are correlated with the incidence of syphilis and it is thought that gonorrhoea is much commoner than syphilis. The author remarks that the sterilizing effect of gonorrhoea and syphilis is well known. Among the Topoke there is no venereal disease and their marriages are fertile ; their women are strictly guarded and there is little adultery.

The author concludes that these races are rapidly approaching extinction, owing to venereal disease, and that counter measures are urgently required.

J. F. Corson.

i. LEE, D. H. K. **Physiological Principles in Tropical Housing, with especial reference to Queensland.** *Univ. of Queensland Papers. Dept. of Physiology.* 1944, May 29, v. 1, No. 8, 22 pp., 3 figs. [2*s.*]

ii. LANGER, K. **Sub-Tropical Housing.** *Univ. of Queensland Papers. Faculty of Engineering.* 1944, May 29, v. 1, No. 7, 12 pp., 12 pls. [10 refs.] [3*s.*]

These are published as original papers by the University of Queensland.

i. Lee sets out the physiological principles which should be taken into account in planning dwellings for climates such as prevail in various parts of Queensland, while Langer deals with house construction and town planning for sub-tropical regions.

Lee discusses the effects of heat on the human body. He remarks that although the heat regulating mechanism can maintain a stable body temperature even in very warm surroundings, regulation is not achieved without cost. It imposes considerable strain on the circulatory and nervous systems and on the digestive tract, so that the margins of safety are reduced, and other deleterious influences may more readily gain an ascendency. The effects of failure of heat regulation are summarized. As chronic effects of heat, asthenia and laxity are common : they result from the combination of prolonged work, bad surroundings, anxiety or malnutrition with exposure to heat. Mental instability and neurasthenia are said to be common chronic effects of heat, coupled usually with too much or too little work and bad social conditions. Work output declines before the maximum capacity for work is affected—this is probably a defensive reaction.

Queensland exhibits a variety of climatic conditions. These are classified as insular equatorial, tropical and subtropical highland, humid coastal, and arid

hinterland climates. Temperature and humidity records for various places are shown diagrammatically.

In house design for tropical and subtropical regions protection from solar radiation is of prime importance. Clearly, the best protection is obtained when the sun can be prevented from reaching the roof, as when the shade afforded by trees can be utilized. External roof surfaces of bright metal, or treated with metallic paints, whitewash, or light-coloured paints, reflect much of the sun's radiation. Roof materials which are good heat insulators are desirable, and if materials of high heat capacity are used they warm up more slowly in the sun than do those of small heat capacity. It is suggested that the inner surfaces of roofs should be treated in one or other of the ways recommended for the outer surfaces, so that they will not radiate heat into the interior of the building. [This suggestion needs qualification, for in this case the radiation is of long wavelength, and whitewash and light-coloured paints at these relatively low temperatures radiate virtually as black bodies. Bright metallic surfaces would be needed to give really efficient protection against re-radiation unless the roofs were effectively insulated, and if the insulation were really effective further treatment might not be worth while.] Windows should be restricted as far as possible to aspects little exposed to the sun.

Stress is laid on the importance of care in the design and arrangement of cooking appliances so that, as far as possible, " wild " heat is avoided.

Methods of ventilation and air conditioning are described. The chief object of air conditioning in the tropics should be to relieve the burden of heat during the hottest periods, and the next important object is to provide comfortable sleeping quarters where nights are so hot as to interfere with sleep.

ii. Langer's outline of the essentials of a sub-tropical house lays emphasis on the need for avoiding unnecessary fatigue. The strain imposed on housewives by the climate is aggravated by the scarcity of domestic help. Kitchens should be small and so planned that unnecessary walking, bending and stretching are eliminated. The lay-out of houses should be simplified. The kitchen should overlook the children's play area, to make supervision easier. Stairs cause much strain on the housewife, and single-storey houses are desirable on that account. Labour-saving principles extend to town planning. The shopping centre should never be more than ten minutes' walk from any house, and the same applies to other communal amenities.

Opportunities for outdoor recreation are of greater importance in the subtropics than in cooler lands, and ample provision should be made for this in town-planning schemes.

The methods advocated for reducing heat in houses are: (1) cooling the walls with overhangs; (2) ventilating the roof space as well as rooms; and (3) proper orientation of the house.

A table is given from which the width of overhang required to cast a given length of shadow in the latitude of Brisbane can be easily ascertained. Ventilation of the roof space by movable louvres is favoured. [Exclusion of bats from the roof space is important in some tropical countries.] Pitched roofs may be provided with perforated water pipes which will keep the roof sprayed as desired, and thus accomplish cooling by evaporation. Adequate ventilation of rooms is necessary, but rooms should be protected from cold winter and hot summer winds.

In considering natural lighting, allowance must be made for the effects of roof overhangs. Data are given which facilitate calculations on this point. Large windows allowing rooms to be well lit, are favoured as productive of less direct glare than will be experienced if windows are smaller and the general

brightness correspondingly less. Indirect glare in rooms can be prevented by arranging screens of vegetation to protect windows.

Plans are given of suggested layouts for houses and for estates.

T. Bedford.

MITSCHERLICH, E. Stallbauten in warmen Ländern. [**Animal Houses in Hot Countries.**] *Deut. Tropenmed. Ztschr.* 1943, Nov. 1, v. 47, No. 21/22, 578–92, 10 figs. [Numerous refs.]

This paper deals with the construction, ventilation, siting and other matters of importance in relation to cattle-sheds, stables, sheep and goat sheds, pigstyes and hen-houses.

BOOK REVIEWS.

GELFAND, M. [M.B., Ch.B., M.R.C.P., D.M.R., etc.]. **The Sick African. A Clinical Study.** With a Foreword by Colonel A. P. MARTIN, O.B.E., M.D., D.P.H., D.T.M. & H., etc. 373 pp. With 123 figs. on 78 pls. & 3 diagrams. 1944. Cape Town: Post-Graduate Press in association with the Stewart Printing Co. [Pty.] Ltd., Carlton House, Alfred Street. [25*s*.]

This book is primarily intended for members of the medical profession, though, as the author rightly hopes, missionaries and medical orderlies will find it helpful, provided that they have a sound theoretical knowledge and some practical experience of sickness in the African or any other.

Though the author has only had a few years' experience, and that confined to Southern Rhodesia, he has an African background, and it is refreshing to find a graduate of the Cape Town Medical School insisting that, not only from the utilitarian but also from the humanitarian viewpoint, an adequate native medical service is an inescapable obligation. He believes that education and Christianity are important factors, and rightly emphasizes that the local training of nurses, midwives, orderlies and "even doctors" (the latter to be restricted to a Government Service for Natives) is the only practical solution.

Vast and divergent as the African continent is, it is nevertheless possible to generalize, and pathology is very similar throughout, with the possible exception of deficiency diseases which, fortunately, are much rarer in the tropical forest area than elsewhere.

The opening chapters on "The Patient" and "The Examination" are helpful in indicating what to look for and what not to expect. One does not quite agree that the native is a fatalist. He *refuses* to accept disease and death as part of the ordained natural order, and insists in smelling out the witch and bringing him to book with the help of his M.O.H., the witch doctor. The author recognizes, however, that it is not the intrinsic problem, but lack of funds and facilities, which make it difficult adequately to treat the sick African.

The chapters on various diseases or systemic affections are very readable and well-arranged, though a slightly more distinctive type for the sub-headings would improve the form. Much attention is usefully given to differential diagnosis, but treatment is usually somewhat condensed.

For the sake of completeness a little rather unnecessary matter has been inserted, such as that on congenital heart disease and the localization of cerebral tumours.

The reviewer agrees with nearly all the factual statements, though a few opinions seem a little too dogmatically stated, *e.g.*, that craw-craw is probably a form of scabies and that tropical myositis is rare in Europeans.

One is glad to see emphasized the fact that tuberculosis control is really more important than a leprosy campaign. A brief warning might be introduced, in regard to the treatment of bilharzia by injection of tartar emetic, as to the danger of lighting up tuberculous lesions in the lungs, especially in view of the author's pessimistic verdict that he has never seen a native recover from phthisis. He will see this eventually. He will also see ground-itch in the feet of riverine tribes.

Subsequent editions of this book will no doubt be called for and will include the use of benzyl benzoate for scabies, D.D.T. for the prophylaxis of louse-borne disease, the use of spraying methods in the control of mosquitoes and the latest about the " sulpha " drugs.

There are remarkably few misprints or mis-spellings. Illustrations are numerous, sometimes duplicated, but their grouping renders them less valuable as aids to the text. References are few and not widely representative, and might be omitted without disadvantage. *C. C. Chesterman.*

SOPER, Fred L., WILSON, D. Bruce, LIMA, Servulo & ANTUNES, Waldemar Sá. **The Organization of Permanent Nation-Wide Anti-*Aëdes aegypti* Measures in Brazil.** 137 pp. With 27 figs. (9 on 5 pls.) & 2 maps. 1943. New York: The Rockefeller Foundation.

In the review of this publication [this *Bulletin*, 1944, v. 41, 699] it was remarked that the price was not mentioned. The Bureau is now informed that the volume is a Rockefeller Foundation publication intended for free distribution to those persons especially interested in, or responsible for, the control of *Aëdes aegypti*. A simple request to the Foundation from interested persons is all that is necessary.

COCKER, Dorothy E. (S.R.N., S.C.M., etc.]. **Aids to Tropical Nursing.** With a Foreword by L. N. NAPIER, C.I.E., F.R.C.P. (Lond.), Director, School of Tropical Medicine, Calcutta. pp. viii+159, 12 figs. 1944. London: Baillière, Tindall & Cox, 7 & 8 Henrietta Street, Covent Garden, W.C.2. [4*s*.]

The aim of the editors of the *Aids to Nursing* series of text-books is to produce handy volumes on different branches of nursing which will serve as accurate text-books for the student nurse and which will also take their place in an up-to-date reference library for the personal use of the qualified nurse.

The authors are sister tutors in the more important teaching hospitals and in the preparation of the series the collaboration of doctors, with expert knowledge of the different subjects, has been secured.

The volume on tropical nursing appears likely to be particularly valuable to nurses in Britain who are intending to go out to the tropics. A short introductory section deals with personal hygiene and gives very practical advice on the rules for the maintenance of health in hot climates. The author is indeed a firm disciplinarian on the subject of indulgence in food and drink in the tropics. Those who hanker after the flesh-pots receive short shrift from her: " Some

people in hot climates habitually over-eat, and obese, ungainly figures are a common sight." Nor is she a supporter of the stay-me-with-flagons school of thought: "Drinking alcohol as a regular habit is not good; those who are used to taking a fair amount are liable to be victims of heat-stroke and the complications following malaria."

In the next short section the disorders due to climate are clearly described. The bulk of the book deals—in alphabetical order—with the more important tropical diseases. The promise of the title is well fulfilled by the detailed attention paid to the nursing care which should be given in each disease; their prophylaxis, however, is only briefly considered; more space might, with advantage, be devoted to the preventive aspect in subsequent editions. Further instruction would also be useful about tropical foods and the dietetic needs of the various peoples in the tropics; for it is chiefly among them that most nurses will subsequently be working.

The publication of this book is very opportune since the need for special courses for nurses going to the tropics has now been recognized. This text-book can be recommended to them with confidence as a concise and accurate account of the clinical aspects of tropical nursing. *M. G. Blacklock.*

Printed under the authority of His Majesty's Stationery Office,
by the South Essex Recorders, Ltd., Ilford.

(1236) Wt. P9/273 1/45 S.E.R. Ltd. Gp. 432

ALPHABETICAL LIST OF AUTHORS OR SOURCES.

Alexander, J. S., Park-Ross, M. & Stein, M., 38.
Allen, A. S., 69.
Allen, H. C., 49.
Andrewes, C. H., King, H., Van den Ende, M. & Walker, J., 20.
Aschenbrenner, R., 25.
Australian Military Forces, 63.

Baker, D. H., 76.
Ball, D. & Ryan, R. C., 19.
Bardhan, P. N., 29.
Bates, M., 72.
Begg, R. C., 46.
Beiglböck, W. & Löscher, H., 31.
Beltrán, E. & R. Larenas, M., 20.
—— & Raúl Larenas, M., 36.
Bercovitz, Z. T., Rodriguez-Molina, R., Hargrave, D. W., Dickie, J. D. & Green, C. E., 47.
Bernard, P. N. & Gallut, J., 34 *bis*.
Bertho, A., 39.
Blanc, G. & Baltazard, M., 33.
Brandenburger, P., 26.
Brown, H. W., 53.
Burke, E. & Chakravarty, K. C., 17.

Calewaert, D., 12.
Carter, H. F., Wedd, G. & d'Abrera, V. St. E., 73.
de Castro Palomino, J., 44.
Chandler, A. C., 32.
Chesterman, C. C., 10.
Chou, C. & Chin, Y. C., 70.
Cochran, D. M., 62.
Cocker, D. E., 79.
Cot Lesmes, V., 44.

Daggy, R. H., 32.
Ding, E., 22.
Duke, H. L., 13.

Eagle, H., Hogan, R. B., Doak, G. O. & Steinman, H. G., 15.
Earle, K. V., 64.
Eberlin, E., 31.
v. Engel, R., 49.
Eyer, H. & Rusko, H., 23.

Fain, A., 14.
Feo, L. G., 72.
Ferro-Luzzi, G., 67.
Findlay, G.M., Markson, J. L. & Holden, J. R., 6.
Fisher, G. E., 57.
Flecker, H., 68.
—— & McSweeny, A., 66.
Fleming, A. McK., 48.
Fogel, R. H. & Huntington, R. W., Jr., 53.
Fulton, J. D., 19.

Gallardo, E., Sanz, J. & Perez Gallardo, F., 23.
Galvão, A. L. A., Corrêa, R. R. & Grieco, S. J., 4.
Gavid, I. K., 5.
Gelfand, M., 78.
Geller, W., 9.
Ghalfoungui, P., 57.
Di Giacomo, M. P. & Mayer, R. A., 47.
Giordano, A. F., 37.
Glasgow, R. D. & Blair, R., 4.
Guhl, R., 51.

Hammick, D. L. & Frith, D., 8.
Heilig, R. & Naidu, V. R., 30.
Helme, A. C. de B., 10.
Howard, A. C., 10.
Hunt, T. C., 5.

Indian Med. Gaz., 30.

Josephs, H. W., 61.

Kammer, V., 48.
Kane, F. F., 42.
Kasimov, B., 50.
Keh-Wei-Huang, 69.
Kessel, J. F., Allison, D. K., Kaime, M., Quiros, M. & Gloeckner, A., 40.
Kirk, R. & Henry, A. J., 18.
Kligler, I. J. & Oleinik, E., 23.
Knipling, E. F., Gjullin, C. M. & Yates, W. W., 73.

Langer, K., 76.
Ledent, H., 75.
Lee, D. H. K., 76.
Louw, A. & Nielsen, H. E., 60.
Luis Dao, L., 17.

McCreary, J. F. & Tisdall, F. F., 58.
MacKichan, I. W., 13.
Madden, A. H., Linquist, A. W. & Knipling, E. F., 73.
Maegraith, B., 10.
Maegraith, B. G., 64.
—— & Findlay, G. M., 12.
—— & Havard, R. E., 12.
Malhotra, R. P. & Chhuttani, P. N., 59.
Manson-Bahr, P., 10.
Martin, A. P., 78.
Martin, R. & Bebey, M., 37.
Masen, J. M., 8.
Mazzoti, L. & Lozano Hube, E., 65.
Mead, J. & Koepfli, J. B., 9.
Mendelsohn, H. V., 66.
Mestre Miyares, J. J., 43.
Michael, P., McLaughlin, R. F. & Cenac, P. L., 66.
Mitscherlich, E., 78.
Montpellier, J. & Catanei, A., 67.
Murphy, R. C., Jr. & Shapiro, S., 58.

Napier, L. N., 79.
Nettel, R., 54.
Nutrition Reviews, New York, 8.

Oliver-González, J. & Torregrosa, M. V., 45.
Ordman, D., 41.

Patterson, H. M., 42.
Patterson, H. S., 28.
Paulley, J. W. & Aitken, G. J., 55.
Piña Daza, M., 47.
Placeo, F., 38.
Polakow, R., 41.
Poth, E. J. & Ross, C. A., 35.
Pradhan, K. G., 29.
Public Health Rep., 32, 33.
Purohit, G. R., 64.

Raettig, H., 25.
Rees, C. W., Bozicevich, J., Reardon, L. V. & Daft, F. S., 36.
Ribbands, C. R., 3 *bis*.
de Rivas, D., 38.
Roberts, D. W. & Najjar, V. A., 56.
Ross, J. A., 38.
Ruiz Castañeda, M., 27.

Sampayo, R. R. L., 65.
Savino, E. & Kusnetz Goobar, J., 33.
Schnelle, G. B. & Young, R. M., 52.
Schulten, H., 27.
Scott, R. B., 42.
Shepherd, W. H. T., 4.
Sieyro Nieto, L., 15.
Silveira, J., 46.
Simpson, M. L., 10.
Singh, B., 24.
Sinton, J. A., 10.
Soper, F. L., Wilson, D. B., Lima, S. & Antunes, W. S., 79.
Stannus, H. S., 10
Steiner, G. & Steiner, G., 74.
Stewart, W., 34.
Stone, P. H., 70.
Sundaram, S. K., 59.

Taylor, E. L., 55.
Tiant, F. R., 45.

Ulitcheva, A. V., 3 *bis*, 4.

Viñes Ibarrola, D. J., 22.

Walters, W., Watkins, C. H., Butt, H. R. & Marshall, J. M., 37.
Williams, W. L., 14.
Wilson, C. S., Mathieson, D. E. & Jachowski, L. A., 73.
Womersley, H. & Heaslip, W. G., 28.
Wu, C. C., 39.

Zambra, E. R., 17.
Zuelzer, W. W., 71.

AN
ANNOTATED BIBLIOGRAPHY OF
MEDICAL MYCOLOGY
1943.

Edited by

S. P. WILTSHIRE, M.A., D.Sc.
DIRECTOR, IMPERIAL MYCOLOGICAL INSTITUTE,

in collaboration with

CHARLES WILCOCKS, M.D., M.R.C.P., D.T.M. & H.
ACTING DIRECTOR, BUREAU OF HYGIENE AND TROPICAL DISEASES,

and

J. T. DUNCAN, F.R.C.S., L.R.C.P. (Ire.), D.T.M. & H.
LECTURER IN BACTERIOLOGY, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

Published 1944] *[Price 5s. 0d. net, post free.*

Orders should be addressed to the Director, Imperial Mycological Institute, Ferry Lane, Kew, Surrey.

'HYPOLOID' AND
Stibophen

in schistosomiasis. Also oriental sore, leishmaniasis americana, filariasis and undulant fever.

In sets of ampoules and in multiple-dose containers.

BURROUGHS WELLCOME & CO.
(The Wellcome Foundation Ltd.)
LONDON

Publications of the Bureau of Hygiene and Tropical Diseases.

TROPICAL DISEASES BULLETIN

containing classified summaries of current papers and reports from the medical and scientific publications of the world on diseases of the tropics and warm countries.

(ISSUED MONTHLY.)

Subscription rate (in advance): 21 shillings per annum, post free. The subscription runs from January to December. Single numbers 2s. 6d. each.

BULLETIN OF HYGIENE

containing abstracts of current medical literature on public health administration, social services, communicable diseases, sanitation, nutrition, industrial hygiene, bacteriology and immunity, and related subjects of public health interest.

(ISSUED MONTHLY.)

Subscription rate (in advance): 21 shillings per annum post free. The subscription runs from January to December. Single numbers 2s. 6d. each.

ORDERS and SUBSCRIPTIONS may be sent direct to the

BUREAU OF HYGIENE AND TROPICAL DISEASES,
Keppel Street,
Gower Street,
London, W.C.1

or through any bookseller.

Cheques and Postal Orders should be made payable to the "Bureau of Hygiene and Tropical Diseases," and crossed "Westminster Bank Ltd."